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PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

ARGO-TECH CORPORATION (FORMERLY TRW, INC.)
23555 EUCLID AVENUE
CLEVELAND, OHIO 44117
OHD 004 179 453

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Argo-Tech Corporation (formerly TRW, Inc.) facility in Cleveland, Ohio. This report summarizes the results of the PA/VSI and evaluates the potential for releases of hazardous wastes or hazardous constituents from the SWMUs and AOCs identified. In addition, a completed U.S. Environmental Protection Agency (EPA) Preliminary Assessment Form (EPA Form 2070-12) is included in Attachment A to assist in setting priorities among Resource Conservation and Recovery Act (RCRA) facilities.

The Argo-Tech Corporation (the facility or Agro-Tech) is located on a 200-acre site in Cleveland, Ohio in Cuyahoga County (latitude 41°34'40" N, longitude 81°31'18" W). The facility is located in a light industrial and residential area of Cleveland. Euclid Creek is 3/4 miles southwest of the facility. Lake Erie is approximately 2 miles to the northwest. The facility is not located in a 100-year flood plain.

The facility was built in 1941 by Thompson Aircraft Products Company (TAPCO, later TRW, Inc.). The facility manufactured precision parts for aircraft, naval vessels, and other military and industrial uses. Manufacturing processes included a variety of stamping and plating procedures. Argo-Tech acquired the facility on October 20, 1986. In addition, Airfoil Forging Textron Corporation (Textron) and Precision Casting Corporation (PCC) each purchased a portion of TRW's operations on August 29, 1986. Argo-Tech also leases portions of the facility to International Gear Corporation (IGC), Maine Mechanical Corporation (MMC), and Propulsion Technologies, Inc. (PTI). Present manufacturing operations at the facility are similar to previous TRW operations.

Argo-Tech produces aircraft fuel pumps. Machining, metal finishing, assembly and testing are part of Argo-Tech's operations. The machining operation generates metal chips and turnings that are stored at the chip dock area before they are shipped off site. Other wastes generated from machining operations include nonhazardous waste oils, coolants, solvents, paint waste, abrasive cleaner waste, and wastewater.

Textron produces compressor blades. Wastes generated by Textron include metal trimmings, lead coatings, waste graphite, waste oils, Kolene (molten sodium hydroxide [NaOH]), and acid wastewaters.

IGC operates several different metal finishing lines. These lines consist of metal plating, stripping, and etching. PCC manufactures casts for helicopter transmissions. Manufacturing and waste-generating processes are similiar to IGC's operations. MCC manufactures casts for nuclear drive transmissions. MMC's manufacturing and waste-generating processes are also similar to IGC's operations. Both PCC and MMC are Department of Defense operations; therefore, information about their manufacturing operations is classified.

PTI manufactures and tests torpedoes and missiles. Wastes generated in this operation are waste Otto fuel (polypropylene glycol dinitrate [PGDN], 22.5 percent di n-butyl sebacate, and 1.5 percent 2-nitro diphenyl amine, cyanide waste, hydrogen cyanide gas, and ammonia gas).

After the saale of the facility to Agro-Tech, TRW maintained responsibility for RCRA closure of SWMUs. On November 30, 1987, TRW submitted to the Ohio Environmental Protection Agency (OEPA) notification of withdrawal from the Part A permit program and a closure plan for dock 2-B (SWMU 3); building 45, the former hazardous waste drum storage area (SWMU 2); and the underground storage tank associated with building 49 (SWMU 1). In October 1985, TRW reported releases of waste Otto fuel associated with the underground storage tank (SWMU 1) in building 49. This unit was included in the facility's closure plan and RCRA-closed in 1989. Waste aviation fuel releases involving the JP-4 underground storage tank farm (SWMU 17) and the former underground storage tank farms (SWMUs 18, 19, 20, and 21) were reported in July and November 1987. OEPA determined that the underground storage tanks involved in the July and November 1987 incidents were subject to RCRA corrective action provisions rather than to closure requirements.

TRW began closure of these units in August 1989, after EPA approval of its closure plan was received. In July 1990, TRW submitted certification that closure was complete and requested the withdrawal of its RCRA Part A hazardous waste permit application. OEPA approved TRW's closure and withdrew the Part A permit application in September 1990. OEPA identified the facility as a large-quantity hazardous waste generator, because the facility remained liable for wastes that were generated during post-closure remedial activities. Argo-Tech retained the same EPA identification number that the former TRW facility had. Textron obtained a seperate EPA

identification number (OHD 981 534 399). The other companies leasing property and operating at the Argo-Tech facility rretained the same EPA identification numbers that the former TRW facility had.

The PA/VSI identified the following 25 SWMUs and 8 AOCs at the facility:

Solid Waste Management Units

1. Former Building 49, Underground Storage Tank
2. Building 45, Former Hazardous Waste Drum Storage Area
3. Dock 2-B, Former TRW Hazardous Waste Drum Storage Area
4. Satellite Hazardous Waste Drum Accumulation Areas
5. Airfoil Forging Textron Hazardous Waste Drum Storage Area
6. Argo-Tech Temporary Hazardous Waste Drum Storage Area
7. Cyanide Afterburner
8. Former Concrete Block Filter Area
9. Chip Dock Area
10. Trichloroethylene Aboveground Storage Tank
11. Argo-Tech Wastewater Treatment Plant
12. Plating Sumps
13. Bulk Waste Otto Fuel Storage
14. Argo-Tech Electroplating Filter Cake Dumpster
15. Textron Kolene Wastewater Treatment System
16. Textron Filter Cake Dumpster
17. JP-4 Underground Storage Tank Farm
18. Former Underground Storage Tank Farm 1
19. Former Underground Storage Tank Farm 2
20. Former Underground Storage Tank Farm 3
21. Former Underground Storage Tank Farm 4
22. Scupper Area
23. Waste Otto Fuel Drum Storage Area
24. Bay k-7 Sump
25. Building 24 and Associated Drain Lines

Areas of Concern

1. Railroad Spur/Lobby 3
2. Post 1
3. Building 7 Tank Farm
4. Forge Shop Addition
5. Colwel Fill Area
6. Colwel Complex
7. Compressor Blowdown Area
8. Former Underground Storage Tank Farm 5

In July 1987, SITEX Corporation installed 13 ground-water monitoring wells to investigate ground-water contamination associated with the underground storage tank areas, the chip dock area (SWMU 9), and other isolated locations at the facility. In 1989, TRW contracted with Engineering-Science to conduct a remedial investigation of the entire facility.

Releases of volatile organic compounds (VOC) and metals to ground water were detected in monitoring wells located at or near several SWMUs and AOCs at the facility. Chlorinated VOCs in concentrations ranging from 0 to 18 ppm were reported in monitoring wells located at or near SWMUs 8, 9, 10, 11, 12, 14, 16, and 25 and AOCs 1, 2, and 3. Aromatic VOCs in concentrations ranging from 0 to 2 ppm were reported in wells located near SWMUs 17, 18, 19, 20, and 21 and AOC 3. A separate-phase, floating hydrocarbon layer ranging from a film to several inches thick has been detected in wells located near SWMUs 17, 18, 19, 20, and 21. Arsenic, cadmium, chromium, lead, and mercury levels at above the site average were detected in wells located at or near SWMUs 6, 8, 9, 10, 11, 12, 14, 16, 17, 18, 19, 20, 21, and 25 and AOC 1.

On October 31, 1985, TRW reported to OEPA a release to surface water. A wetland area associated with the torpedo test building (building 49, SWMU 1) had been contaminated with PGDN and cyanide. The source of the contamination was reported to have been wastewater which had been discharged from torpedo testing operations. Before 1985, a 1,000-gallon underground steel separator tank was used to collect liquid residues of torpedo fuel. Intermittent discharges of 200 to 300 gallons each from the tank had contaminated the soil and a wetland area approximately 100 feet southeast of the building. Between September and October, 1989, TRW removed the 1,000-gallon separator tank, the discharge pipe, and the holding tanks. A polygon area of contaminated soil was excavated. The adjacent runoff stream was dredged, and soil was excavated to a depth of 2.5 feet. In November 1989, the excavated area associated with the holding tank was backfilled. The area was certified RCRA closed by Engineering-Science in July 1990. OEPA approved the closure on August 17, 1990. The wetland was filled in and replaced by a paved road. The potential is low for future releases to surface water from any of the SWMUs and AOCs at the facility. The nearest surface water, Euclid Creek, is 3/4 mile southwest of the facility.

No releases to air were observed during the PA/VSI. The potential for release to air is low. All volatile wastes are stored in sealed drums or tanks.

The underground storage tank near building 49 (SWMU 1) that was the source of the surface-water contamination also contaminated the soil in the area surrounding the tank, as well as in the wetland and in the streambed. This area was remediated as described above.

Engineering-Science identified several areas of soil contamination at the facility. The areas ranged in size from 1,000 square feet to over 100,000 square feet. Soils contaminated with chlorinated VOCs were found near the Argo-Tech temporary hazardous waste drum storage area (SWMU 6), the former concrete block filter area (SWMU 8), the chip dock area (SWMU 9), the Argo-Tech wastewater treatment plant (SWMU 11), the plating sumps (SWMU 12), the Argo-Tech electroplating filter cake dumpster (SWMU 14), the Textron filter cake dumpster (SWMU 16), the scupper area (SWMU 22), building 24 and its associated drain lines (SWMU 25), the railroad spur/lobby 3 (AOC 1), the building 7 tank farm (AOC 3), the forge shop addition (AOC 4), and the compressor blowdown area (AOC 7). Aromatic VOCs were detected in soils near SWMUs 17 through 21 and AOCs 1 and 3. PCBs were found in soils near SWMUs 9, 17, 19, and 20, and 24, and AOC 6. Metals (arsenic, cadmium, chromium, lead, and mercury) were detected at levels above the site average in soils near SWMUs 8, 9, 11, 12, 14, 17, 18, 19, 20, and 25, and AOCs 1 and 3. Cyanide was found in soils near SWMUs 6, 11, 12, 14, and 16 and AOCs 3, 4, and 5.

Access to the site is restricted. The facility is bounded on the north by railroad tracks, on the west by 222nd Street, and on the south by Euclid Avenue. Fences surround the entire facility, and on the east, its boundary is the fence itself. All bulk chemical storage is inside the fenced area. The facility is protected by security guards 24 hours a day; round-the-clock TV-camera surveillance also is maintained. The facility is located in Cleveland, Ohio (population: 513,822) in an area of mixed residential and industrial use. Some 500 to 1,000 people live within 1/2-mile of the facility. Various schools and parks are located within a 1/2 mile radius of the facility. The nearest surface water is Euclid Creek, which flows northwest into Lake Erie and is located 3/4 mile southwest of the facility. Uses of Euclid Creek are unknown. Ground water in the area is not used as a drinking-water source. There is one well of unknown use located approximately 1 mile upslope and upgradient from the facility.

The potential for any release of hazardous wastes or hazardous constituents from this facility is high. PRC recommends the following actions for the SWMUs and AOCs listed below.

SWMU 6 Argo-Tech Temporary Hazardous Waste Drum Storage Area

Available sampling data indicate that the concentrations of VOCs (dichloroethylene [DCE] and trichloroethylene [TCE] and metals (arsenic, chromium, and lead)) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study (CMS). Therefore, PRC recommends that this SWMU be included as part of a CMS to identify and evaluate potential remedial alternatives.

SWMU 8 Former Concrete Block Filter Area

Available sampling data indicate that the concentrations of VOCs (1,1,1-trichloroethane [TCA], 1,1-DCE, and tetrachloroethylene [PCE] and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PRC therefore recommends that this SWMU be included as part of a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 9 Chip Dock Area

Available sampling data indicate that the concentrations of VOCs and metals (arsenic, chromium, mercury, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. In addition, cadmium concentrations in the soil also exceeded the action levels. PRC, therefore recommends that this SWMU be included as part of a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 10 Trichloroethylene Aboveground Storage Tank

PRC recommends additional sampling in the area to determine the extent of ground-water contamination.

SWMU 11 Argo-Tech Wastewater Treatment Plant

Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PRC therefore recommends that this SWMU be included as part of a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 12 Plating Sumps

Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives. PRC also recommends that the integrity of the sumps be checked.

SWMU 14 Argo-Tech Electroplating Filter Cake Dumpster

Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 16 Textron Filter Cake Dumpster

Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 17 JP-4 Underground Storage Tank Farm

Available sampling data indicate that the concentrations of VOCs (benzene) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. Polychlorinated biphenyl (PCB) concentrations in the soil also have exceeded the proposed action levels. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives. PRC also recommends that the tanks be tested for leaks and to determine their integrity.

SWMU 18 **Former Underground Storage Tank Farm 1**

Available sampling data indicate that the concentrations of VOCs (benzene) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 19 **Former Underground Storage Tank Farm 2**

Available sampling data indicate that the concentrations of VOCs (benzene) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 20 **Former Underground Storage Tank Farm 3**

Available sampling data indicate that the concentrations of VOCs (benzene) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. PCB concentrations in the soil also have exceeded the proposed action levels. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

SWMU 21 **Former Underground Storage Tank Farm 4**

Available sampling data indicate that the concentrations of VOCs (vinyl chloride) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives. PRC also recommends conducting a study to determine whether all tanks in this tank farm have been removed.

SWMU 22 Scupper Area

Available sampling data indicate that elevated concentrations of total petroleum hydrocarbons (TPH) in the soil near this unit. TPH concentrations have ranged from 58 mg/kg to 26,000 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the extent of the contamination. Ground-water sampling in this area also should be conducted.

SWMU 24 Bay k-7 Sump

Available sampling data indicates that relatively high concentrations of semivolatiles, ranging from 3,800 mg/kg to 58,000 mg/kg, and PCBs at 140 mg/kg were obtained from the sump. PRC recommends that soils and sediment be removed from the sump and disposed of according to applicable regulations. PRC also recommends that additional sampling be conducted to determine whether there have been releases to the soil or ground water.

SWMU 25 Building 24 and Associated Drain Lines

Available sampling data indicate that elevated concentrations of VOCs (TCE; cis-1,2-DCE; PCE; 1,1,2,2-tetrachloroethane [PCA]; TPH; and toluene) and metals (arsenic, cadmium, chromium, lead, and mercury) in the soil near this unit. TPH concentrations ranged from 49 mg/kg to 780 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the source and extent of the contamination.

AOC 1 Railroad Spur/Lobby 3

Available sampling data indicate that the concentrations of VOCs (TCE and vinyl chloride) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a CMS. Arsenic and chromium concentrations in the soil also exceeded action levels. The exact source of the contamination is unknown. PRC therefore recommends that this SWMU be included in a CMS conducted to identify and evaluate potential remedial alternatives.

AOC 2 Post 1

Available sampling data indicates that 1,1,1-TCA and 2-hexanone were present in the ground water near this unit. PRC recommends that further sampling of the ground water be conducted to determine the extent of the contamination. Sampling of the soil also should be conducted.

AOC 3 Building 7 Tank Farm

Available sampling data indicate elevated concentrations of VOCs (chloroform; 1,1-DCE; cis-1,2-dichlorobenzene; PCE; TCE; 1,1,1-TCA; and vinyl chloride) and metals (arsenic, cadmium, chromium, lead, and mercury) in the ground water near this unit. VOC concentrations ranged from 5 ppb to 320 ppb. Soils in this area also exhibited elevated levels of VOCs and metals. TPH concentrations in the soil ranged from 5.3 mg/kg to 290 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil and ground-water sampling to determine the source and extent of the contamination.

AOC 4 Forge Shop Addition

Available sampling data indicate elevated concentrations of VOCs (TCE; trans-1,2-DCE; and cis-1,2-DCE) and metals (arsenic, cadmium, and lead) in the soil near this unit. Lead concentrations ranged from 16 mg/kg to 6,400 mg/kg. Cadmium concentrations (61 mg/kg) exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this AOC be included in a CMS conducted to identify and evaluate potential remedial alternatives.

AOC 5 Colwel Fill Area

Available sampling data indicate elevated concentrations of metals (arsenic, chromium, lead, and mercury) in the soil near this unit. Lead concentrations ranged from 4.7 mg/kg to 89 mg/kg. Mercury concentrations (24 mg/kg) exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this AOC be included in a CMS conducted to identify and evaluate potential remedial alternatives.

AOC 6 Colwel Complex

Available sampling data indicate detectable quantities of xylene and elevated concentrations of metals (arsenic, chromium, and lead) in the soil near this unit. PCB concentrations in the soil near building 40 exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. PRC therefore recommends that this AOC be included in a CMS conducted to identify and evaluate potential remedial alternatives.

AOC 7 Compressor Blowdown Area

Available sampling data indicate elevated concentrations PCE and TPH in the soil near this unit. PRC recommends ground-water sampling and additional sampling of the soil be conducted in this area to determine the extent of the contamination.

AOC 8 Former Underground Storage Tank Farm 5

Available sampling data indicate elevated concentrations of VOCs (TCE; 1,2-DCE; and TPH) in the soil near this unit. TPH concentrations ranged from 58 mg/kg to 26,000 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the extent of the contamination. Ground-water sampling in this area also should be conducted.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES IX) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region V Environmental Priorities Initiative, the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) programs are working together to identify and address RCRA facilities that have high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of setting priorities among facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential release(s) to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, whether or not the unit was intended to manage solid or hazardous waste.

Units that fall within the definition of a SWMU include:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA usually has exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include an area where wood preservative has dripped; a loading and unloading area; or an area where solvent used to wash large parts has dripped continually onto soils.

An AOC is any area where a release to the environment of hazardous waste or constituents has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where the possibility of such a release in the future is considered strong.

The purpose of the PA is to:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other information needs to be filled during the VSI

The PA includes a general review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is to:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all SWMUs, identifying evidence of releases, initially identifying potential sampling locations, and obtaining all information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the Argo-Tech Corporation, formerly TRW, Inc., in Euclid, Ohio. The PA was completed on April 16, 1991. PRC gathered and reviewed information from Ohio EPA (OEPA) and from EPA Region V RCRA files. The VSI was conducted on August 28, 1991. It included interviews with representatives from TRW and

Argo-Tech and a walk-through inspection of the facility. Twenty-five SWMUs and 8 AOCs were identified at the facility.

PRC completed EPA Form 2070-12 using information gathered during the PA/VSI. This form is included in Attachment A. The VSI is summarized and inspection photographs are included in Attachment B. Field notes from the VSI are included in Attachment C.

2.0 FACILITY DESCRIPTION

This section describes the facility's location, past and present operations (including waste management practices), waste generating processes, release history, regulatory history, environmental setting, and receptors.

2.1 FACILITY LOCATION

The Argo-Tech Corporation (the facility or TRW) is located at 23555 Euclid Avenue, Cleveland, Cuyahoga County, Ohio (latitude 41°34'40"N, longitude 81°31'18"W). The facility is located in a light industrial and residential area of Euclid, Ohio. The facility occupies approximately 200 acres and is bordered to the north by a Norfolk and Western Railroad right of way and light industrial facilities. The Reliance Electric Company lies to the east of the facility. East 222nd Street borders the facility to the west, with Euclid Avenue to the south. There are residential areas to the south and west of the facility. Figure 1 shows the facility location.

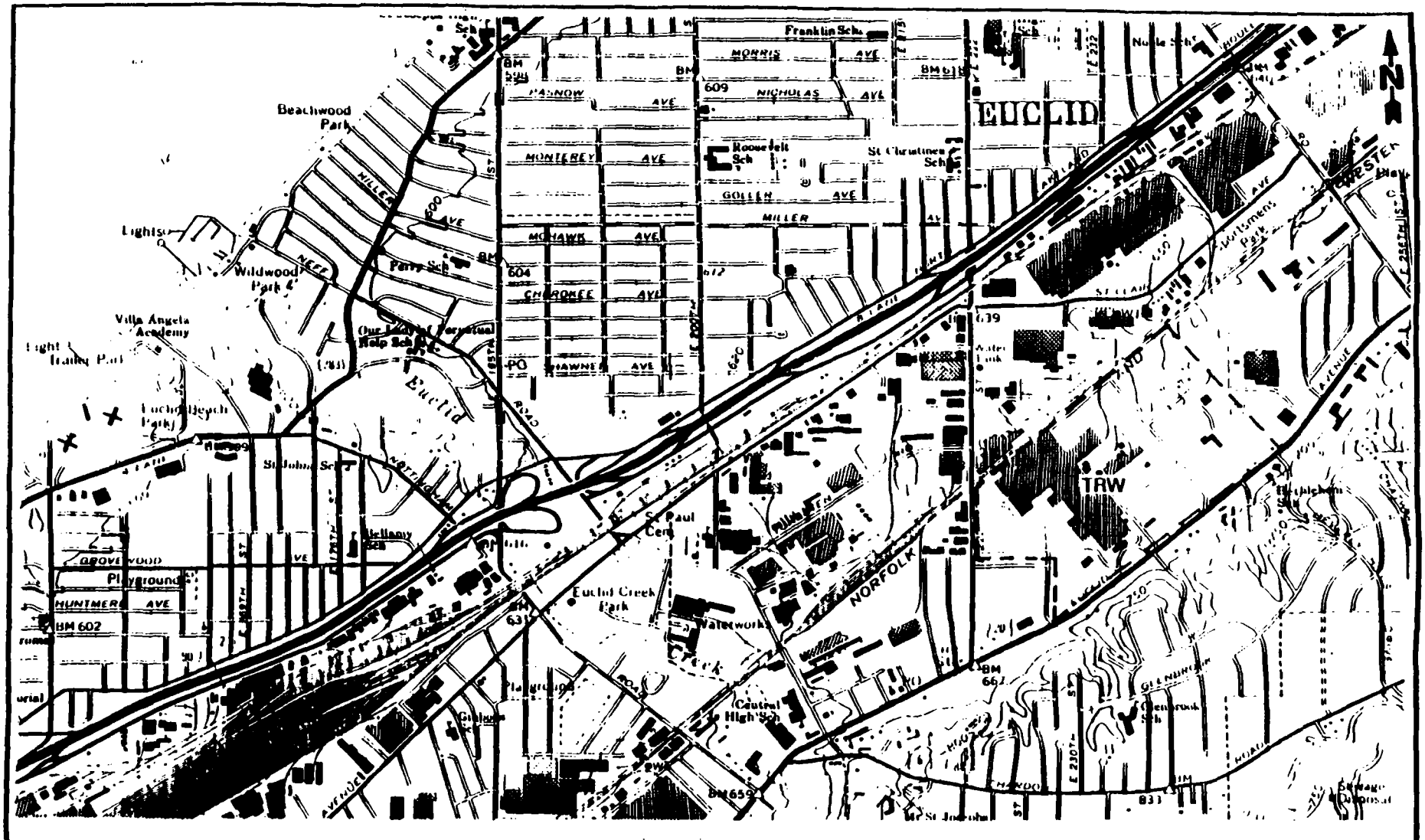
2.2 FACILITY OPERATIONS

The facility was built in 1941 by Thompson Aircraft Products Company (TAPCO, later TRW, Inc.). The facility manufactured precision parts for aircraft, naval vessels, and other military and industrial uses. Manufacturing processes included a variety of stamping and plating procedures. Argo-Tech Corporation acquired the facility on October 20, 1986. Air Foil Forging Corporation purchased a portion of the facility on August 29, 1986. Present manufacturing operations at the facility are similar to previous TRW operations (Argo-Tech, 1991). Figure 2 shows the layout of the facility.

Currently, six separate companies occupy the facility. Together, the companies employ approximately 2,000 people on three shifts per day. A brief summary of each company and its operations is presented below.

Argo-Tech Corporation produces aircraft fuel pumps. Machining, metal finishing, assembly, and testing are part of Argo-Tech's operations.

Airfoil Forging Textron produces compressor blades. Manufacturing of compressor blades involves four steps: forging; kolene treatment; metal treatment; and machining. Forging and



SCALE 1:24000

SOURCE: USGS, 1979

TRW INC.
EAST CLEVELAND, OHIO

FIGURE 1

FACILITY LOCATION

PRC ENVIRONMENTAL MANAGEMENT, INC.

machining generate metal trimmings, lead coatings, waste graphite, and waste oils. Metal and kolene treatment involves abrasive cleaning, acid and base bath, and heat treatment. Wastes generated during this process include kolene wastewater, nonhazardous waste, and acid and base wash waters which are treated by the Textron kolene wastewater treatment plant (SWMU 15).

International Gear Corporation (IGC) operates several different metal-finishing lines. These lines consist of metal plating, stripping, and etching processes. IGC bought the majority of the plating line from Argo-Tech in 1986. Currently, IGC products constitute approximately 95 percent of the plating done at the facility. The remaining 5 percent of the plating volume is produced by Argo-Tech. Specific plating operations at the facility include chrome, copper, black oxide, manganese phosphate, magnesium anodize, and nickel sulfamate lines. Stripping operations present at the facility include cadmium stripping and nickel stripping. Cyanide and chromate are the major constituents of the nickel and cadmium stripping solutions, respectively. Etching solutions consist of nitric-hydrofluoric acid.

Precision Castparts Corporation Airfoils, Inc. (PCC) manufactures casts for helicopter transmissions. Manufacturing processes are similar to IGC's operations. Marine Mechanical Corporation (MMC) manufactures casts for nuclear drive transmissions. Manufacturing and waste-generation processes are similar to IGC's operations. Both PCC and MMC are Department of Defense operations; therefore, information about their manufacturing operations is classified.

There are several areas at the facility that have underground storage tanks (UST). A JP-4 aviation fuel UST farm is bounded by buildings 30A, 31, 33, and 56. This area has two 10,000-gallon virgin fuel tanks, a 10,000 gallon oil/water separator tank, and a 20,000 gallon dump tank (Argo-Tech, 1991). Four former UST farms also were in this area. A tank farm for aviation fuel near building 7 was removed in the 1970s. Argo-Tech now has USTs in that area. A 1,000-gallon steel separator tank near building 49 was used to store waste Otto fuel from torpedo testing. This tank was discovered to be leaking in 1985 and removed according to the closure plan submitted by Engineering-Science (ES) in 1989 (ES, 1988, 1989).

Table 1 lists the SWMUs identified during the PA/VSI.

Table 1
Solid Waste Management Units (SWMUs)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Former Building 49, Underground Storage Tank	Yes	RCRA closure approved by OEPA on 9/17/90
2	Building 45, Former Hazardous Waste Drum Storage Area	Yes	RCRA closure approved by OEPA on 9/17/90
3	Dock 2-B, Former TRW Hazardous Waste Drum Storage Area	Yes	RCRA closure approved by OEPA on 9/17/90
4	Satellite Hazardous Waste Drum Accumulation Areas	Yes	Active
5	Airfoil Forging Textron Hazardous Waste Drum Storage Area	Yes	Active
6	Argo-Tech Temporary Hazardous Waste Drum Storage Area	Yes	Active
7	Cyanide Afterburner	No	Active
8	Former Concrete Block Filter Area	No	Inactive; ceased operation in 1984
9	Chip Dock Area	Yes	Active
10	Trichloroethylene Aboveground Storage Tank	No	Active
11	Argo-Tech Wastewater Treatment Plant	No	Active
12	Plating Sumps	No	Active
13	Bulk Waste Otto Fuel Storage	No	Active
14	Argo-Tech Electroplating Filter Cake Dumpster	No	Active
15	Textron Kolene Wastewater Treatment System	No	Active
16	Textron Filter Cake Dumpster	No	Active
17	Underground Storage JP-4 Tank Farm	Yes	Active
18	Former Underground Storage Tank Farm 1	No	Inactive
19	Former Underground Storage Tank Farm 2	No	Inactive
20	Former Underground Storage Tank Farm 3	No	Inactive

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
21	Former Underground Storage Tank Farm 4	No	Inactive
22	Scupper Area	Yes	Active
23	Waste Otto Fuel Drum Storage Area	Yes	Active
24	Bay k-7 Sump	No	Active
25	Building 24 and Associated Drain Lines	No	Inactive

* A RCRA hazardous waste management unit is one that currently requires or formerly required a RCRA Part A or Part B permit.

2.3 WASTE GENERATING PROCESSES

The facility was built in the 1940s by Thompson Aircraft Products Company later TRW, Inc. Between the 1940s and the 1960s, the facility was used mainly for manufacturing automotive valves (PRC, 1991). Waste management practices during those two decades could not be determined during the PA/VSI.

Currently, numerous wastes are generated at the Argo-Tech facility. Waste-generating operations include forging, heat treatment, machining, metal finishing, and electroplating. Additional waste-generating operations, including manufacturing of aircraft engine parts and weapons testing, took place under contract to the federal government (ES, 1988).

Argo-Tech produces aircraft fuel pumps. Production of these pumps entails four general operations: machining, metal finishing, assembly and testing, and inspection. Each operation generates several waste streams. The machining operation generates metal chips and turnings. These nonhazardous wastes are stored on the chip dock (SWMU 9) until they are shipped off site for reclamation. The machining operation produces nonhazardous waste oils and coolants and hazardous solvents used for cleaning. Hazardous liquid paint-coating wastes are generated during the metal finishing operation. Additional wastes generated by this operation include nonhazardous abrasive cleaners, hazardous solvents, and wastewaters that are treated by the Argo-Tech wastewater treatment plant (SWMU 11). Assembly and testing generate nonhazardous waste oils and coolants, along with hazardous hydrocarbon test fluids and solvents. The hydrocarbon test fluids are primarily aviation fuels such as JP-4. The inspection operation also generates hazardous waste solvents used primarily as cleaners (Argo-Tech, 1991). Hazardous waste solvents, liquid paint coatings, and nonhazardous waste such as oils and coolants that cannot be treated in the wastewater treatment plant are stored in 55-gallon drums in the Argo-Tech temporary hazardous waste drum storage area (SWMU 6).

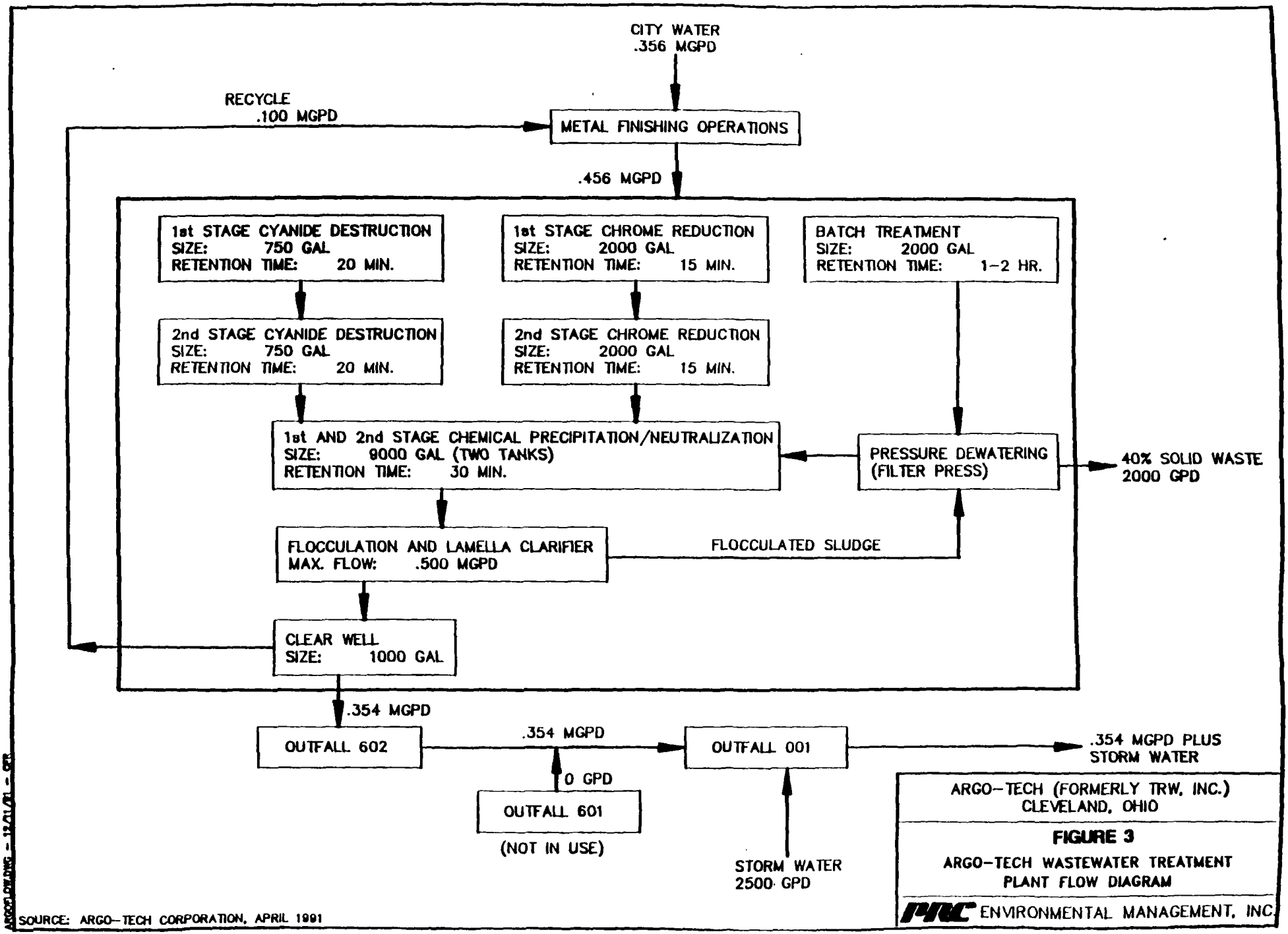
Airfoil Forging Textron, one of the tenants at the Argo-Tech facility, produces compressor blades. Compressor blade production involves four steps: forging, Kolene System descaling, metal treating, and machining. Each process produces a waste stream. Forging handles mostly titanium parts, and generates flash metal trimmings; residual paint coatings, some of which are hazardous due to the lead content; residual graphite; and spent machine oil. The Kolene system is used to remove scale from the titanium parts. The system consists of a Kolene DG salt (a molten solution of NaOH) bath followed by an acid bath. Kolene system wastewaters are sent

through a filter press and discharged to the sanitary sewer system. Solid wastes from the filter press are hazardous and are stored in 55-gallon drums in building 4 (SWMU 16) before they are disposed of off site. The Kolene system is followed by metal treatment. This operation involves three treatments: abrasive cleaning; acid and base bath; and heat treatment. The abrasive cleaning generates nonhazardous wastes, while the acid and base bath wastes are pumped to the Argo-Tech wastewater treatment plant (SWMU 11). The heat treatment operation does not generate any wastes. The final operation is machining, which generates nonhazardous waste cutting oils and coolants used in machining the parts. These wastes are stored in 55-gallon drums in the Airfoil Forging Textron hazardous waste drum storage area (SWMU 5) (Argo-Tech, 1991).

Wastewater from all tenants' various operations at the property is treated at the wastewater treatment plant (SWMU 11) operated by Argo-Tech. Wastewaters containing cyanide are treated in a two-stage process, using two 750-gallon cyanide destruction tanks. Chrome wastes are treated in a two-stage process, using two 2,000-gallon chrome reduction tanks. All wastewaters also are treated in two 9,000-gallon chemical precipitation/neutralization tanks. A flocculation and lamella clarifier removes sludge, which is sent to a filter press for dewatering. The flow diagram in Figure 3 illustrates this process. This hazardous wastewater treatment sludge (EPA Waste Code F006) is stored in 55-gallon drums in the hazardous waste storage area (SWMU 14) before it is taken off site for disposal. The treated water is discharged first to permitted internal Outfall 602, then to permitted Outfall 001, and finally to the storm sewer at East 222nd Street. (There were three outfalls [Outfalls 001, 601, and 602]) listed in the National Pollutant Discharge Elimination System ([NPDES]) permit application but only two ([Outfalls 001 and 602]) are operational ([TRW, 1989]). Storm water from East 222nd Street goes to Lake Erie at two separate discharge locations (PRC, 1991). Treated wastewater is discharged at a rate of approximately 354,000 gallons per day through NPDES Outfall 602 to a storm sewer (Argo-Tech, 1989).

Propulsion Technologies Inc. manufactures and tests torpedoes and missiles. Testing of these devices is conducted in building 33A and generates waste Otto fuel. Otto fuel is 76 percent polypropylene glycol dinitrate (PGDN), 22.5 percent di n-butyl sebacate, and 1.5 percent 2-nitro diphenyl amine (ES, 1988). Waste fuel is stored in 55-gallon drums in building 56 and in bulk storage tanks in building 30 (Argo-Tech, 1991). Torpedo testing also generates cyanide and ammonia waste gases which are treated in the cyanide afterburner (ES, 1988).

There are several satellite accumulation sites at the facility. Argo-Tech has ten satellite areas, containing the following wastes: methyl ethyl ketone (MEK) dioxane mixture; 1,1,1-



ARGO-TECH (FORMERLY TRW, INC.)
CLEVELAND, OHIO

FIGURE 3

ARGO-TECH WASTEWATER TREATMENT
PLANT FLOW DIAGRAM

EMC ENVIRONMENTAL MANAGEMENT, INC.

SOURCE: ARGO-TECH CORPORATION, APRIL 1991

trichloroethane; xylene; chlorinated oil; freon; solid Otto fuel; and solvents (perchloroethylene and trichloroethylene). IGC has three satellite areas for the following wastes: waste paint; micro strip B (methylene chloride); waste Turco (a toluene-based rubber coating). Airfoil Forging Textron has one satellite accumulation drum containing 1,1,1-trichloroethane still bottoms (Argo-Tech, 1991). Table 2 lists the solid wastes at the facility.

2.4 RELEASE HISTORY

TRW first reported evidence of a release to OEPA on October 31, 1985. A wetland area and soil associated with the torpedo test building (Building 49) had been contaminated with Otto fuel containing propylene glycol dinitrate (PGDN) and cyanide. The source of the contamination was reported to be wastewater which had been discharged from torpedo testing operations. Before 1985, a 1,000-gallon underground steel separator tank was used to collect liquid residues of torpedo fuel. Intermittent discharges of 200 to 300 gallons from the tank had contaminated the soils and wetland area approximately 100 feet southeast of the building (TRW, 1988). The facility did not hold a National Pollution Discharge Elimination System (NPDES) permit for this discharge (OEPA, 1988g). After the discovery, overflows from the separator tank were diverted and stored in three holding tanks west of building 49. Between September and October 1989, TRW removed the 1,000-gallon separator tank, the discharge pipe, and the holding tanks. A polygon area of contaminated soil was excavated. The adjacent runoff stream was dredged, and soil was excavated to a depth of 2.5 feet. In November 1989, the excavated area associated with the holding tank was backfilled (TRW, 1990b). In July 1990, Engineering-Science certified that building 49 was cleaned in accordance with RCRA guidelines. OEPA approved the closure on August 17, 1990 (TRW/Argo-Tech, 1991). The wetland was filled in and replaced by a paved road. A new torpedo test facility was built outside building 33, and all torpedo test activities were shifted to that area.

On July 1, 1987, a verbal report was made to EPA and OEPA regarding the discovery of soil contaminated with JP-4 aviation fuel at the JP-4 tank farm (SWMU 17). The date and time of the initial release and the quantity of JP-4 fuel involved is not documented (TRW, 1987a). TRW initiated a study to identify the magnitude and scope of contamination. Between June 22 and July 10, 1987, thirteen ground-water monitoring wells, two soil borings, and seven soil probes were completed.

Table 2

Solid Wastes

Waste/EPA Waste Code	Source	Primary Management Unit*
Otto fuel (D001, D003)	Torpedo testing	1, 7, 13, 23
Electroplating sludge (F006)	Plating line	2, 8, 11, 14, 16
Trichloroethylene (F001)	Manufacturing process	3, 4
1,1,1-Trichloroethane (F001)	Manufacturing process	5, 6
Trichloroethylene (F001, U228)	Manufacturing process	10
Freon (F001)	Manufacturing process	4, 6
MEK (F005)	Manufacturing process	3
MEK-dioxane mixture (F005, U159)	Dry film	4, 6
Ceramic Slip (F008)	Manufacturing process	3
Corrosive Solid	Manufacturing process	3
Perchloroethane (F001)	Manufacturing process	4, 6
Xylene (F003)	Manufacturing process	4, 6
Waste paint (D001, D011)	Coating process	4, 6
Chlorinated oil (F001)	Manufacturing process	4, 6, 9
Micro strip B (Methylene Chloride, F001)	Manufacturing process	4, 6
Waste Turco (toluene-based rubber, F005, U220)	Manufacturing process	4, 6, 22
Waste oil	Manufacturing process	4, 6, 9, 22
Oxidizing material (D001)	Manufacturing process	6
Metal scraps and cuttings	Manufacturing process	9
Electroplating wastewater	Plating lines	11
Alkaline cleaning solutions	Metal finishing	11, 12
Oxide plating solutions	Metal finishing	11, 12
Anodizing solutions	Metal finishing	11, 12
Cyanide stripping solutions	Metal finishing	11, 12
Etching solutions	Metal finishing	11, 12
Flammable solid poison (D001, D008)	Torpedo testing	13, 23
Kolene wastewater	Kolene system	15

Table 2

Solid Wastes (continued)

Waste/EPA Waste Code	Source	Primary Management Unit*
Kolene filter cakes	Kolene system	16
Flammable liquid (D001, D002, D007, D008)	Manufacturing process	17, 18, 19, 20, 21, 22, 23, 24
Aviation fuel (D001)	Engine pump testing	17, 18, 19, 21
Mercury wastes	Drain lines	25

Note:

* A primary management unit refers to a SWMU that currently manages the waste.

On November 4, 1987, TRW reported to EPA and OEPA that analysis of samples taken between June 22 and July 10, 1987 from the wells and from the storm and sanitary sewer flows indicated that the soil and ground water at former underground storage tank (UST) areas (SWMU 18 through 21) were contaminated with chlorinated solvents, cyanide, metals, petroleum products, and polychlorinated biphenyls (PCB) (Sitex Consultants Midwest ([SITEX], 1987). The date and time of the initial release and the quantities of materials released were not documented (TRW, 1987b).

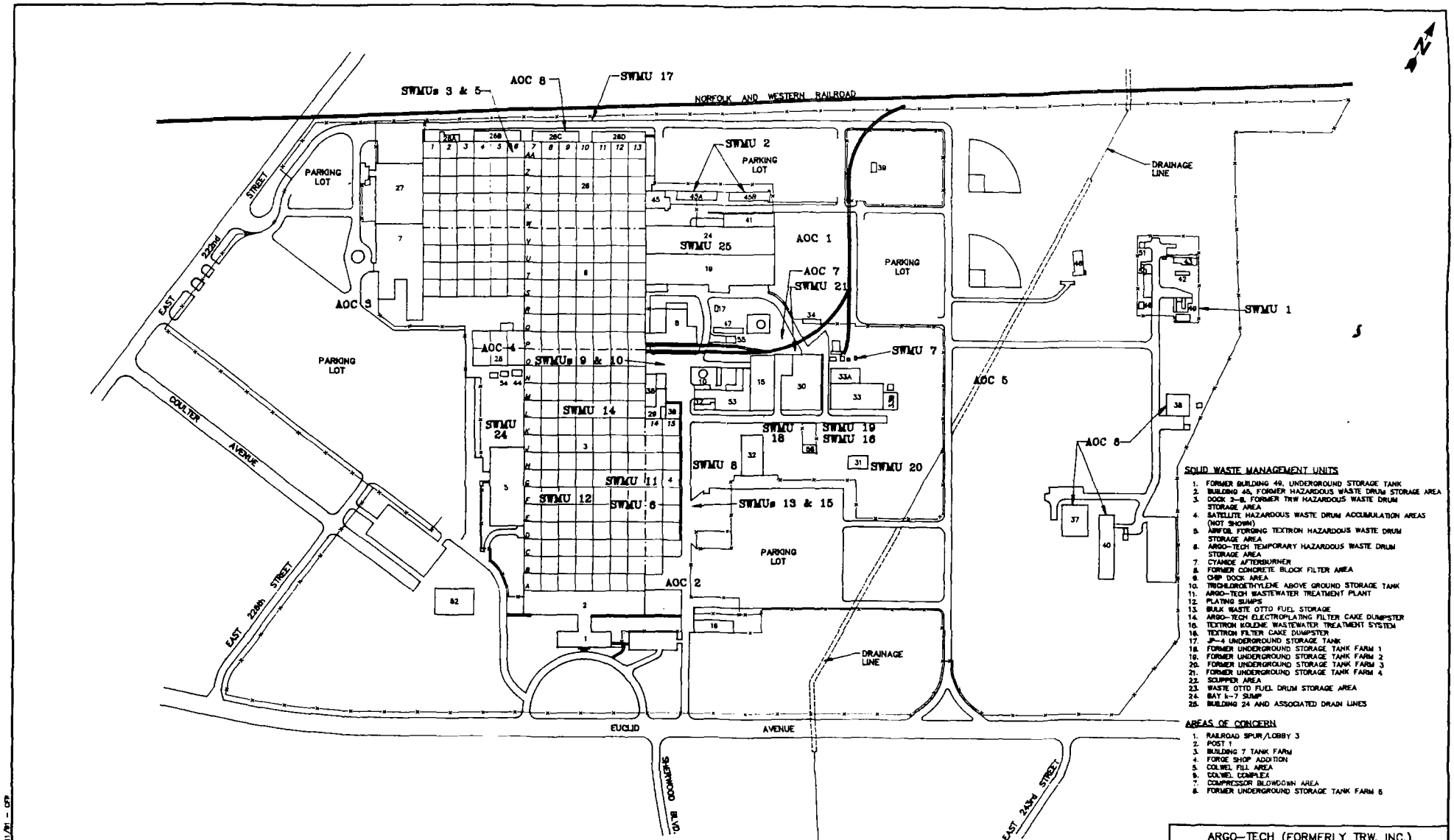
On March 30, 1988, TRW provided OEPA with analytical results of data collected during the initial investigation of contaminated areas (OEPA, 1988f). The soil at the former UST area east of building 31 was characterized as containing organic compound residuals. Ground-water samples contained organic solvents and PCB-1248 (26,000 ug/l). The soil at the UST area located south of building 15 was characterized by semivolatile organics (50 to 180 mg/kg) and benzene near detection levels. Ethylbenzene, xylenes, and aliphatic hydrocarbons were detected in soil associated with both existing and former UST areas outside building 33. Vinyl chloride (5 ug/l) was detected in ground-water samples. The soils and ground water at the chip dock area north of building 4 contained chlorinated hydrocarbons, in concentrations ranging from 4 to 180 mg/kg for soils, and 3,500 to 140,00 ug/l for ground water. Pentachlorophenol (57 ug/l) and PCB-1260 (49 ug/l) were detected in ground-water samples. Tetrachloroethane (PCA); trichloroethene (TCE); and 1,1,1-trichloroethane in concentrations ranging from 1 to 180 mg/kg in soil, and from 2 to 140,000 ug/l in ground water were detected at several locations at the facility. Chloroform and 1,1,1-trichloroethane were the predominant VOCs detected in the storm and sanitary sewer water. Trace metals such as cadmium, nickel, antimony, lead, and zinc were detected in soils and ground-water samples where petroleum residuals were present (SITEX, 1987).

No releases to air were documented.

2.5 REGULATORY HISTORY

TRW, Inc. submitted a Notification of Hazardous Waste Activity to EPA on November 11, 1980.

On November 17, 1980, TRW submitted a Part A permit application which identified F-, D-, and U-listed wastes being treated and stored at the facility (TRW, 1980). OEPA granted TRW interim status on May 14, 1982.



SOURCE: ENGINEERING-SCIENCE REMEDIAL INVESTIGATION, JULY 1990.

NOT TO SCALE

ARGO-TECH (FORMERLY TRW, INC.)
CLEVELAND, OHIO

FIGURE 2

FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

ARGO-LAY.DWG - 12/21/91 - GFP

OEPA determined that, after October 9, 1981, the facility was operating in violation of Ohio Revised Code (ORC) Chapter 3734 because the facility failed to obtain a hazardous waste installation and operation permit. In a May 16, 1984 letter to TRW, OEPA required that the facility resolve its permit status by submitting 1) a Part A application; 2) a facility waste analysis plan; 3) a general facility inspection schedule; 4) a contingency plan; 5) a closure plan; 6) a description of personnel training; 7) a closure financial assurance instrument; 8) a demonstration of financial assurance; and 9) associated unpaid permit fees totaling $3,000 (OEPA, 1984). TRW submitted the requested documentation and fees to OEPA on June 4, 1984 (TRW, 1984).

On October 20, 1986, TRW sold the facility to Argo-Tech, Inc. TRW also sold two operations divisions to Textron and Precision Casting Corporation, both tenants to Agro-Tech. Agro-Tech has continued operations similar to TRW at the facility since then. Argo-Tech also leases other areas of the facility to Technautics Corporation. After sale of the facility to Argo-Tech, TRW maintained responsibility for RCRA closure of SWMUs.

TRW canceled its liability insurance for the facility effective January 1, 1986. In a series of communications between December 1986 and April 1987, Ohio EPA requested a financial test from the facility. The facility provided assurance that TRW would remain financially responsible for subsequent remediation activities at the site (OEPA, 1986; OEPA, 1987). Although TRW has continued its involvement in remedial activities at the facility, details of TRW's involvement and responsibilities along with Agro-Tech are unclear.

On November 30, 1987, TRW submitted to OEPA notification of withdrawal of its Part A application program and a closure plan for dock 2-B (SWMU 3), building 45 (SWMU 2), and Building 49 (SWMU 1) (TRW, 1987c). On February 2, 1988, OEPA investigated contamination associated with product releases which were reported in October 1985, July 1987, and November 1987. The first incident, reported on October 31, 1985, involved a release of Otto fuel (containing PGDN and cyanide) from the storage area on the eastern side of building 49 (SWMU 1). OEPA confirmed that the October 1985 release was addressed in the facility's closure plan (building 49). The second incident, reported on July 1, 1987, involved a release of an undocumented quantity of JP-4 aviation fuel from the JP-4, underground storage tank farm (SWMU 17). Subsequent investigations, during which soil and ground-water samples were taken, revealed that additional areas (SWMUs 19 through 21) were contaminated with chlorinated solvents, cyanide, metals, petroleum products, and PCBs. On November 4, 1987, the facility reported these findings as a third incident of release. OEPA determined that the underground storage tanks involved in the

July 1987 and November 1987 incidents were subject to RCRA corrective action provisions, rather than closure requirements (OEPA, 1988a).

In a February 16, 1988 letter to EPA, TRW requested a 30-day extension of the 90-day temporary waste storage limit. The facility attributed its inability to dispose of waste within the 90-day limit to "unforeseen, temporary and uncontrollable circumstances" (TRW, 1988).

After a series of communications between July and November 1988 regarding revisions to the closure plan, OEPA approved the closure plan (dock 2B, building 45, and building 49) on December 6, 1988 (OEPA, 1988d; OEPA, 1988e; OEPA, 1988f; OEPA, 1988g; TRW, 1988). Because OEPA was not authorized at that time to administer federal RCRA programs TRW, Inc. was not permitted to implement closure until EPA approved the plan. In an August 8, 1989 letter to TRW, OEPA informed the facility that EPA approval had been received on June 30, 1989 (OEPA, 1989e). TRW began closure operations on August 18, 1989.

A financial record review of the former facility was conducted on May 2, 1989. When it received the facility's financial test, OEPA determined that the facility was in compliance with regulations governing financial assurance for facility closure and liability (OEPA, 1989d).

On February 5, 1990, TRW requested an extension of the 90-day waste storage limit for the units undergoing closure (dock 2B, building 42, and building 49) due to its inability to clean-close within the time limit (TRW, 1990a). Ohio EPA granted the facility an extension through July 9, 1990 (OEPA, 1990a).

On July 13, 1990, TRW submitted documentation which certified that closure was complete and requested the withdrawal of the RCRA Part A hazardous waste permit application (TRW, 1990b). OEPA conducted a closure inspection of the areas covered by the closure plan (dock 2b, building 45, and building 49) on September 6, 1990. OEPA approved TRW closure and withdrew the Part A permit application on September 17, 1990. OEPA identified the facility as a large-quantity hazardous waste generator, because the facility remained liable for wastes that were generated during post-closure remediation activities (OEPA, 1990b).

Argo-Tech purchased the former TRW facility on October 20, 1986. A summary of Argo-Tech's regulatory history follows.

Both Airfoil Forging Textron (Textron) and PCC Airfoils, Inc. (PCC) also purchased some manufacturing operations from TRW in 1986. Argo-Tech, however, maintained ownership of the property. Subsequently, Textron and PCC purchased their respective properties from Argo-Tech (Richardson, 1991a). Argo-Tech retained the same EPA identification number that the former TRW facility had had (OHD 004 179 453). Textron obtained a separate identification number (No. OHD 981 534 399). The other companies operating at the former TRW facility retained the same EPA identification numbers that the former TRW facility had had. Correspondence between OEPA and EPA clarified the liability issues. To do so necessitated the assignment of separate identification numbers, and OEPA instructed the companies at the former TRW facility to re-submit notification forms (OEPA, 1988b; OEPA, 1988c).

Argo-Tech submitted Notification of Hazardous Waste Activities to EPA on February 17, 1989 (Argo-Tech, 1989a). PCC is identified under Argo-Tech's identification number (No. OHD 157 367 301) because PCC listed Argo-Tech as the primary property owner. As of September 1991, Argo-Tech had contacted PCC and OEPA to clarify this error (Richardson, 1991c).

Propulsion Technologies, Inc. (PTI) submitted a Notification of Hazardous Waste Activity to EPA on November 27, 1990 (PTI, 1990). Marine Mechanical Corporation (MMC) submitted a Notification of Hazardous Waste Activity to U.S. EPA on November 27, 1990. The EPA identification number for International Gear Corporation (IGC) is OHD 198 540 593 (Argo-Tech, 1991)

On December 27, 1973, in accordance with regulations of the National Pollution Discharge Elimination System (NPDES) permit program, EPA issued a permit for TRW's Wastewater treatment system. The NPDES permit (No. OHD 000281) stipulated that reduction of pollution be achieved by December 1, 1974 and compliance with effluent limitations be achieved by January 1, 1975 (TRW, 1973b). TRW completed modifications to the Wastewater treatment system on April 1, 1975.

On July 8, 1975, TRW requested that EPA modify TRW's NPDES permit requirements to eliminate ammonia monitoring and to alter particulate monitoring requirements because the concentrations of each compound in discharge from the facility is below baseline levels. The permit was not modified (TRW, 1975). On May 9, 1978, TRW submitted a NPDES permit renewal application which included the same modifications requested in the July 8, 1975 application (TRW, 1978).

In an October 30, 1981 letter to TRW, OEPA informed the facility that, under a consolidated permit regulation effective May 19, 1980, the agency was required to review effluent data for metals, cyanides, and phenols before issuing NPDES permits. TRW notified Ohio EPA on February 17, 1982 that the facility had hired a consultant to provide the agency with the required analytical effluent data (TRW, 1982).

On May 24, 1984, OEPA renewed and modified NPDES Permit No. OH 0000281 to include installation of flow measurement instruments. On June 4, 1984, EPA included Outfalls 001, 002, and 602 to the NPDES permit. On September 9, 1985, in accordance with the final permit, TRW submitted a Toxic Organic Pollutant Management Plan to OEPA.

In a February 16, 1989 letter to Ohio EPA, TRW notified the agency of its intention to transfer the NPDES permit to Argo-Tech, the current owner of the facility (TRW, 1989).

TRW submitted a renewal application for NPDES Permit No. OH 0000281 to EPA in the name of Argo-Tech. On February 21, 1989, OEPA conducted a facility inspection for an NPDES permit renewal. On July 3, 1989, the transfer of NPDES Permit No. OH 0000281 from TRW to Argo-Tech was authorized by OEPA (OEPA, 1989c). OEPA prepared a Water-Quality-Based Effluent Unit Report, which was used to update Argo-Tech's NPDES permit (OEPA, 1989a). OEPA submitted a final NPDES permit to Argo-Tech on September 29, 1989 (Argo-Tech, 1989b).

In a January 19, 1990 letter to OEPA, Argo-Tech submitted a permit application for the installation of flow-measurement instruments to monitor treated process water from Station 602 (Argo-Tech, 1990). In compliance with NPDES requirements for permit No. OH 0000281, an Argo-Tech subcontractor to TRW submitted a Water Usage and Discharge Study on September 24, 1990 (CT Consultants, 1990).

No air permits were identified in the file review.

2.6 ENVIRONMENTAL SETTING

This section describes the climate, flood plain and surface water, geology and soils, and ground water in the vicinity of the TRW facility.

2.6.1 Climate

Average temperatures in Cleveland range from a low of 26 degrees Fahrenheit (°F) in January to a high of 72 °F in July. In summer, northern areas nearest Lake Erie are markedly colder than the rest of the area. Precipitation is well distributed during the year. From late fall through winter, snow squalls are frequent and total snowfall is normally heavy. Of the total annual precipitation, 60 percent usually falls between April and September. Average relative humidity in mid-afternoon is 60 percent, and the average humidity at dawn is 80 percent. The percentage of possible sunshine is 70 percent in summer and 30 percent in winter. The prevailing wind direction is from the south 10 out of the 12 months during the year. Annual average wind speed is 10.6 miles per hour. Highest monthly average wind speed is 12.3 miles per hour, in January. A wind rose diagram for the Cleveland area was not available. Average annual precipitation is 35.4 inches, and the intensity of a 1-year, 24-hour rainfall is 2 inches (National Oceanic and Atmospheric Administration, 1990). Average annual net precipitation is 5.4 inches.

2.6.2 Flood Plain and Surface Water

The facility is within three-quarters of a mile Euclid Creek, which flows northwest into Lake Erie. Lake Erie is located 2 miles northwest of the facility. Regional surface drainage in the area is northward toward Lake Erie. The facility is not located in a 100-year flood-plain (U.S. Geological Survey [USGS], 1974). Most of the facility is drained by a storm sewer system. Figure 2 shows the main storm water drainage line. Open surface-water ditches flow directly into the storm sewer system, which discharges into Lake Erie. No other surface-water features exist on the facility.

2.6.3 Geology and Soils

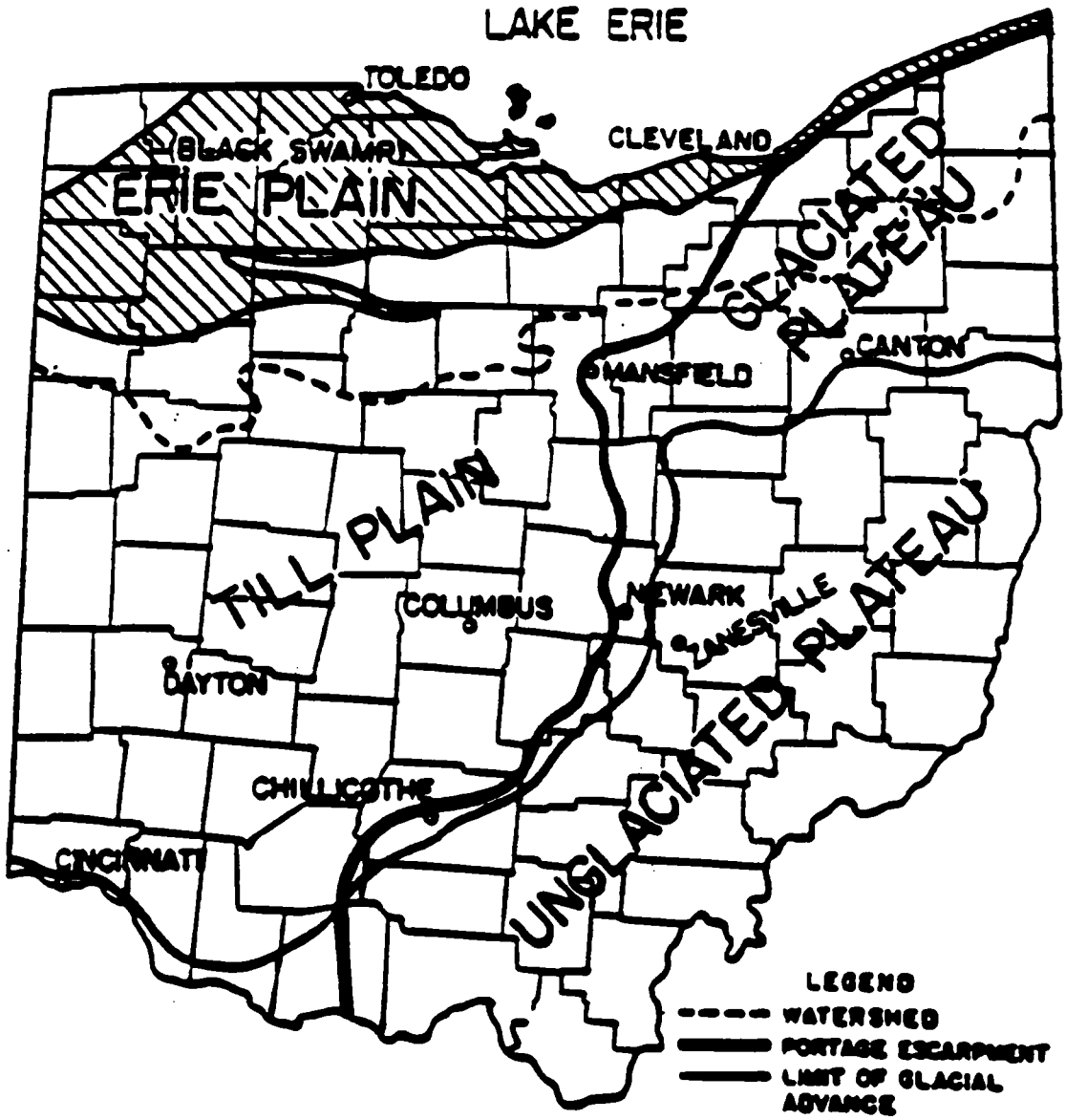
The exposed rocks of the area are of sedimentary origin and range in age from late Devonian to Pleistocene. They fall into two general classes: indurated stratified rocks of late Devonian and early Carboniferous ages and unconsolidated surficial deposits of Pleistocene age. The surficial deposits consist mainly of Pleistocene glacial and lacustrine deposits and Recent alluvium. These Pleistocene deposits form a blanket ranging in thickness from 0 to 440 feet. The indurated rocks underlie the Pleistocene deposits and crop out in the beds and gorges of streams, quarries, and other excavations. The total thickness of Paleozoic strata exposed in this area is

about 750 feet. These beds consist of shale, sandstone, and conglomerate of Late Devonian, Early Mississippian, and Early Pennsylvanian ages (Cushing et al, 1931).

Figure 4 illustrates the physiographic boundary lines in Ohio. Figure 5 illustrates the geologic features of the Cleveland area. As these figures illustrate, thicknesses of weak shale mark the surface of the Appalachian Plateau (depicted as Plateau on Figure 5) and the two lesser platforms (depicted as Till Plain and Lake Plain on Figure 5) on the slope of the Portage Escarpment. The uppermost formation is the Sharon conglomerate, of Lower Pennsylvanian age. It is the youngest exposed Paleozoic rock in this area and is the capstone formation of the plateau across northeastern Ohio. Below the Sharon conglomerate, other formations include: the Orangeville and Meadville shales of Mississippian age; the Cleveland and Bedford shales, classed by some as Upper Devonian and by others as Lower Mississippian age; and the Chagrin shale of late Upper Devonian age (Cushing et al, 1931). Exposed rocks are underlain by large thicknesses of Devonian, Silurian, and Ordovician formations, presumably of Cambrian age, resting on a floor of Precambrian crystalline rocks. Figure 6 shows the approximate thickness of each formation found in the Cleveland area (Cushing et al, 1931).

The site lies within the Lake Plain physiographic region. As Figure 7 illustrates, the Lake Plain is a wedge-shaped region of silty clay sediments that extends across the northern part of Cuyahoga County from the Lake Erie shoreline southward to the base of the Portage Escarpment. The Portage Escarpment crosses Cuyahoga County in a broad arc from northeast to southwest.

Three distinct soil units are present on the facility. These units are Urban land, Urban land-Allis complex, and the Hornell-Urban land complex. Urban land makes up the majority of the soil on the property. This unit is characterized by nearly level topography, of which more than 80 percent of the surface is covered by structures such as asphalt, concrete, buildings, and other artificial surfaces which make soil identification impractical. A small area in the northeast portion of the property is classified as Urban land-Allis complex. This unit consists of Urban and a moderately deep, nearly level and gently sloping, poorly drained Allis soil. The surface layer of the Allis soil is typically dark grayish-brown, silty loam, approximately 6 inches deep. The subsoil is grayish-brown, mottled, very firm silty clay and is approximately 27 inches deep. Undrained areas of Allis soils have a seasonally high water table near the surface in fall, winter, and spring, and during extended wet periods. Permeability is slow to very slow, available water capacity is low, and runoff is slow. The third minor soil unit, Hornell-Urban land complex, runs parallel to Euclid Avenue on the southeast boundary of the facility. The unit consists of rolling



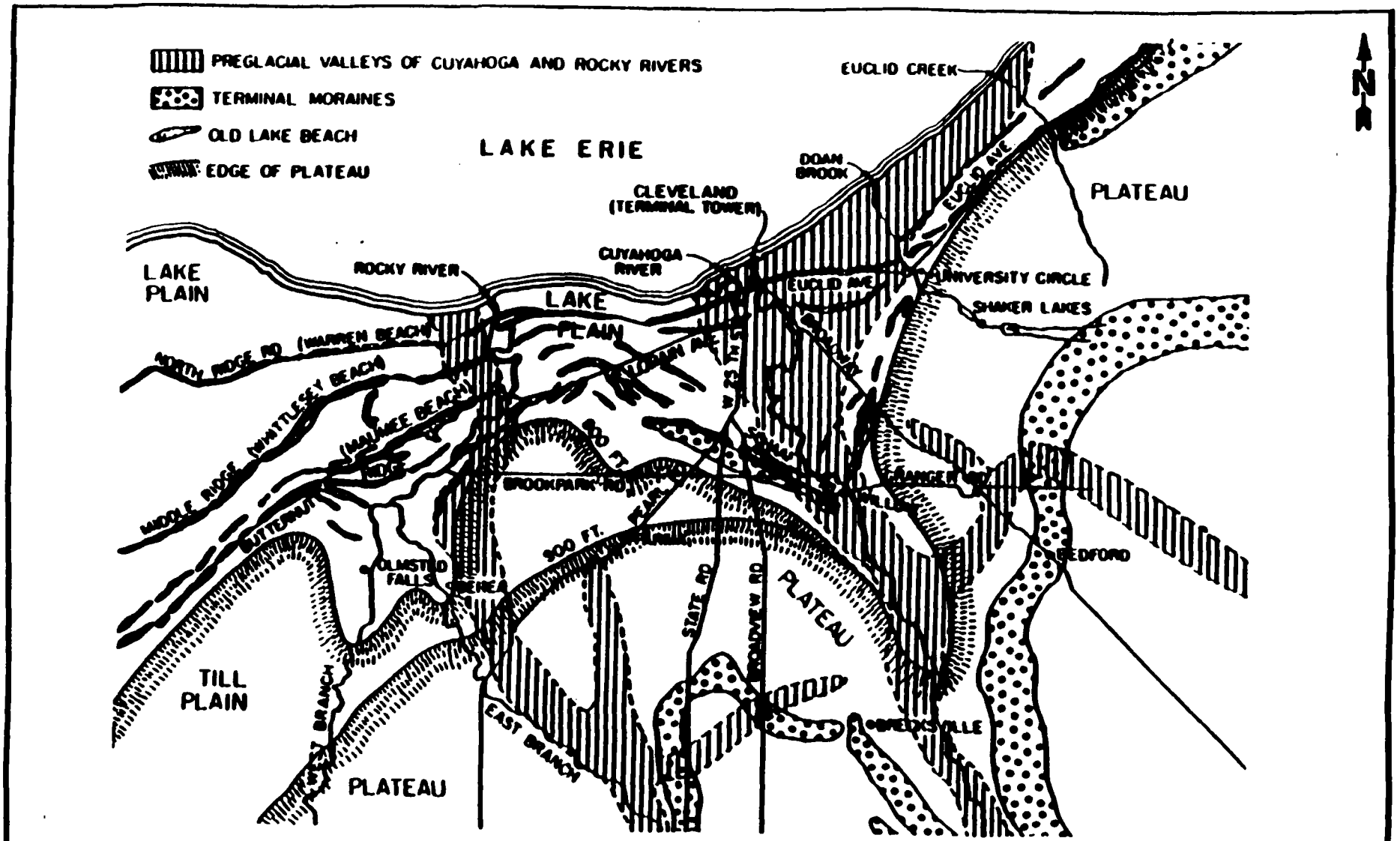
SCALE NOT AVAILABLE

SOURCE: WILLIAMS, 1940

TRW INC.
CLEVELAND, OHIO

FIGURE 4
PHYSIOGRAPHIC BOUNDARY LINES IN OHIO

ENVIRONMENTAL MANAGEMENT, INC.



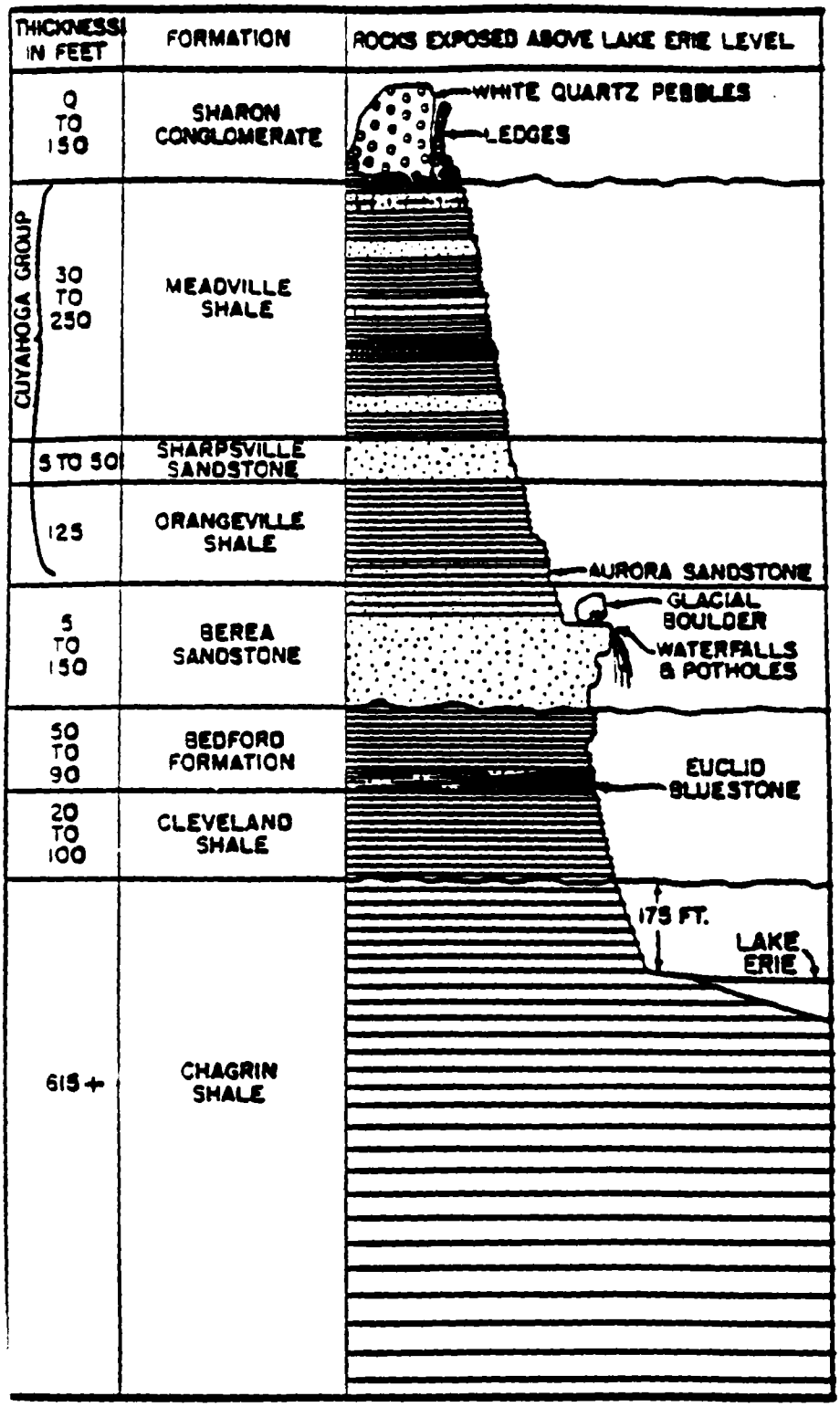
SCALE NOT AVAILABLE

SOURCE: WILLIAMS, 1940

TRW INC.
CLEVELAND, OHIO

FIGURE 5
GEOLOGICAL FEATURES
OF THE CLEVELAND AREA

ENVIRONMENTAL MANAGEMENT, INC.

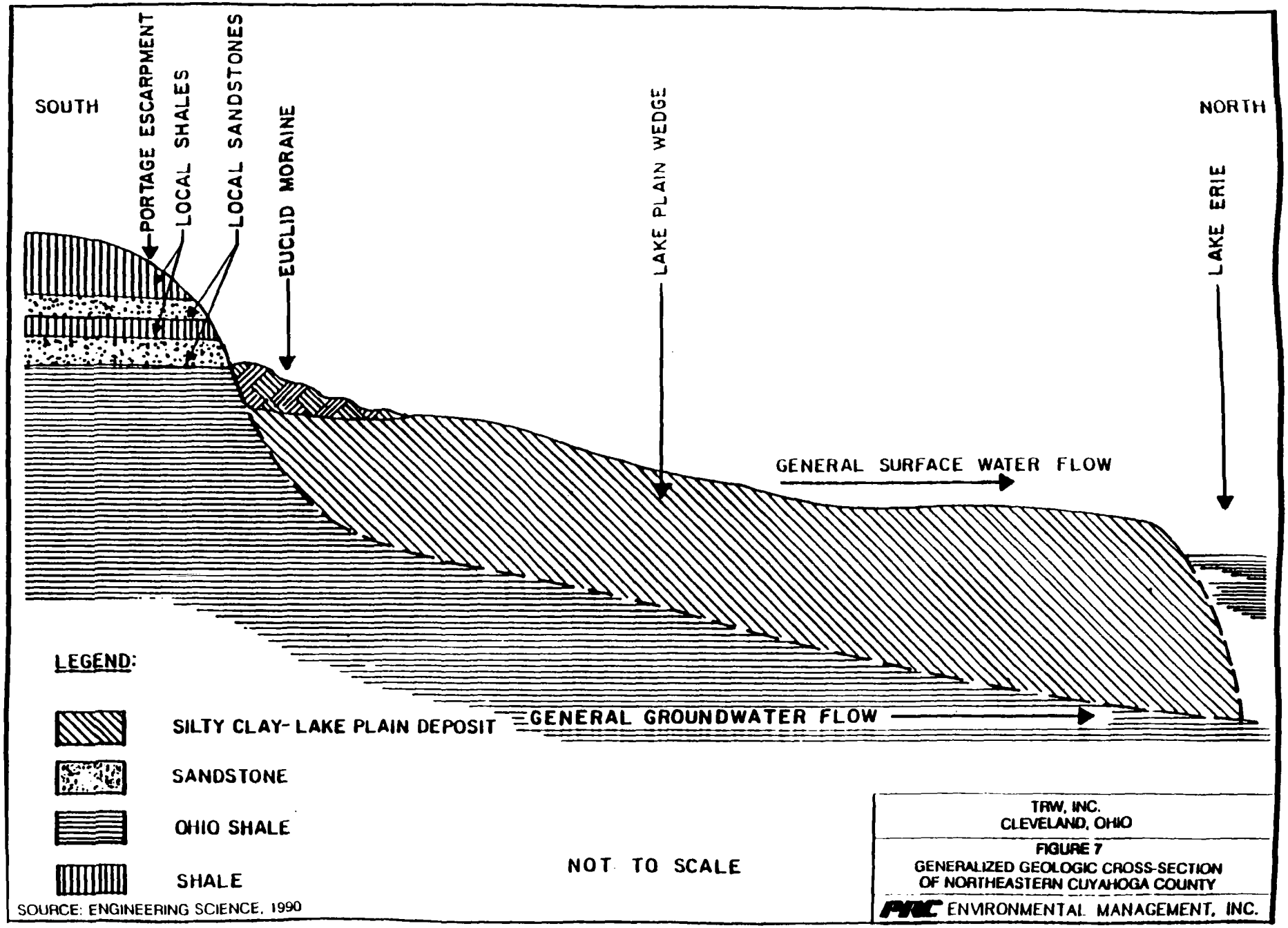


TRW, INC.
CLEVELAND, OHIO

FIGURE 8
REPRESENTATIVE GEOLOGIC CROSS-SECTION
OF THE CLEVELAND AREA

ENVIRONMENTAL MANAGEMENT, INC.

3, 1940


SOUTH
PORTAGE ESCARPMENT
LOCAL SHALES
LOCAL SANDSTONES
EUCLID MORAINE
LAKE PLAIN WEDGE
NORTH
LAKE ERIE
GENERAL SURFACE WATER FLOW
GENERAL GROUNDWATER FLOW
LEGEND:
SILTY CLAY- LAKE PLAIN DEPOSIT
SANDSTONE
OHIO SHALE
SHALE
NOT TO SCALE
SOURCE: ENGINEERING SCIENCE, 1990
TRW, INC.
CLEVELAND, OHIO
FIGURE 7
GENERALIZED GEOLOGIC CROSS-SECTION
OF NORTHEASTERN CUYAHOGA COUNTY
ENVIRONMENTAL MANAGEMENT, INC.

soil that is moderately deep and somewhat poorly drained. Typically, this soil unit has a layer of dark grayish-brown, silt loam, approximately 6 inches deep. Undrained areas of soils have a seasonally high water table at a depth of from 12 to 30 inches from the in winter and spring, and during extended wet periods (U.S. Soil Conservation Service 977).

Ground Water

Specific information about the ground water beneath the site was not available. A general ion of ground water for the Cleveland area follows. The immediate area around the plant lain largely by Cleveland and Chagrin shales. In this area, these formations are completely tive of ground water for large scale use (Schmidt, Walker, 1954). Generally, however, supplies of 3 to 4 gallons per minute can be developed, although such wells have to be per than wells of corresponding yields in other aquifers (Ohio Department of Natural [ODNR], 1952). Based on the topographic relief gradient taken from aerial photos, the ter flow is expected to be southeast to northwest. The ground-water flow rate is ed; however, it is expected to be very slow, based on the soil and features identified at facility. The depth to the water table in the Lake Plain area averages approximately 4 ow the surface, usually observed at the interface between unconsolidated sediments (ES, 1990).

RECEPTORS

go-Tech facility is located in northeast Cleveland near the town of Euclid, Ohio. population of 57,520 is the community most directly affected by the facility. It is pproximately 500 to 1,000 people live within a 1-mile radius of the Agro-Tech ly TRW). The nearest residences are located across Euclid Avenue south of the oss East 222nd Street west of the facility. Both these locations are less than 1/4 ility. North and east of the facility are light industries. The facility is d, with 24-hour security maintained. Access to the facility is controlled by guard

facility is drained by a storm sewer system. Figure 2 shows the main storm . Open surface-water ditches flow directly into the storm sewer system, which e Erie. No other surface-water features exist on the facility. The closest

surface-water feature is Euclid Creek, a north-flowing stream located approximately 3/4 mile southwest of the site. Regional surface drainage in the area of the facility is northwest toward Lake Erie, which is located approximately 2 miles northwest (ES, 1990). A wetland area approximately 100 feet southeast of building 49 was filled in and replaced by a paved road in 1991. There are no other sensitive environments or ecological receptors within 2 miles of the facility.

Water for residential and industrial use in this area is provided by the city of Cleveland municipal water system, which has water intakes in Lake Erie, upstream of the storm water discharge point (ES, 1990). The Ohio Department of Natural Resources indicated that one known private water well exists within a 1-mile radius of the facility. The well is drilled into a low yielding shale and is located to the south, upgradient of the facility (ES, 1990). Sixteen other wells are located within a 1- to 3-mile radius of the facility. These wells also are located upslope of the facility. The depth to ground water at the facility is approximately 4 to 7 feet below ground surface, at the bedrock and overburden interface (ES, 1990). No known ground-water wells are located downgradient of the facility. It is therefore unlikely that a release to ground water from the facility would pose a risk of human exposure.

3.0 SOLID WASTE MANAGEMENT UNITS

section describes the 25 SWMUs identified during the PA/VSI. The information
r each SWMU is: description of the unit, dates of operation, wastes managed, release
ory of release, and PRC observations.

Former Building 49, Underground Storage Tank

tion: The former building 49 was located in the northeastern portion of the facility (see Figure 2). The building was located in a fenced compound and was used for torpedo testing. Torpedo testing facilities consisted of two test firing cells, a storage area for Otto fuel, and a 1,000-gallon underground wastewater separation tank. Wastewater containing liquid fuel residue and cyanide is generated by torpedo test firing. Until late 1985, the wastewater was stored in a 1,000-gallon underground steel storage tank. Liquid residues of unburned fuel were separated in the tank and hauled off site for disposal. The remaining wastewater was discharged to a runoff stream located to the northeast of the tank. Building 49 was demolished in 1989 (ES, 1990a). Photographs 1 and 2 in Attachment B depict this area.

This unit was constructed and started operation in 1965.

RCRA closure was certified by Engineering-Science in July 1990 (ES, 1990). OEPA approved closure certification on September 17, 1990 (TRW/Argo-Tech, 1991).

Wastes managed consisted of wastewaters containing liquid torpedo fuel residue (PDGN) and cyanide (D003) (ES, 1988).

Wastewaters were contained in a 1,000-gallon underground steel separation tank.

On October 31, 1985, TRW, Inc. notified the National Response Center (NRC) of an oily sheen on a swale near building 49 (Resetar, 1991). During the spill investigation, it was discovered that wastewater resulting from the torpedo test firing had been discharged through a 1,000-gallon underground steel separation tank which was designed to remove and collect liquid residues of torpedo fuel. The separation tank overflowed and discharged through an underground pipeline into the soil and a wetland area about 100 feet south of building 49 (ES, 1988). An irregularly shaped area of approximately 300 square feet was affected. Contaminants released by the spill included torpedo fuel (Otto fuel) and cyanide. Environmental media affected by the spill included surface soils and surface water. The area was remediated as part of RCRA closure of building 49, which was completed in July, 1990 (ES, 1990). OEPA approved closure certification on September 17, 1990 (TRW/Argo-Tech, 1991).

Observations:	Building 49 was demolished in December 1989 (ES, 1990). The area currently is grass-covered. No visible signs of soil staining, vegetative stress, or burnout were noted during the VSI (PRC, 1991).
SWMU 2	**Building 45, Former Hazardous Waste Drum Storage Area**
Unit Description:	This unit is located in the north-central portion of the facility (see Figure 2). The unit was constructed in the 1940s as a rifle test-firing target range. The walls and floors of the building are concrete. The unit is divided into two separate areas (A and B) by a concrete wall. Area A is 315 square feet and area B is 420 square feet. The unit was used to store 55-gallon drums of hazardous wastes. The unit had a capacity of approximately 80 drums. Photographs 3 and 4 in Attachment B show this area.
Date of Startup:	This unit was used for storage of hazardous waste before 1980. The actual startup date is unknown.
Date of Closure:	Storage of hazardous waste ceased in 1985. RCRA closure was certified by Engineering-Science in July 1990 (ES, 1990). OEPA approved closure certification on September 17, 1990 (TRW/Argo-Tech, 1991).
Wastes Managed:	Wastes managed in this unit included wastewater treatment sludge (F006) containing cyanides and metal hydroxides from electroplating operations.
Release Controls:	The drums were stored indoors on a concrete floor. The floor sloped downward to the east. Metal dike plates along the eastern edge of the floor prevented leakage of hazardous materials into the water pit area. Sumps were located along the north and south walls (ES, 1988).
History of Release:	No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.
Observations:	The unit was locked at the time of the VSI. The inside of the unit was vacant. No evidence of staining or discoloration was apparent (PRC, 1991).
SWMU 3	**Dock 2-B, Former TRW Hazardous Waste Drum Storage Area**
Unit Description:	This unit is located indoors in the northwest corner of building 26. The area had a wood-block floor on a concrete base and occupied approximately 8,100 square feet. About 2,100 square feet of this area were used for storage of hazardous waste. This area was enclosed by a 9-foot-high chain-link fence with a sliding gate (ES, 1988). The design capacity of the unit was 420 drums. The unit formerly stored hazardous waste in 55-gallon drums. Photographing this area was not permitted.
Date of Startup:	This unit has managed waste since 1981.
Date of Closure:	RCRA closure was certified by Engineering-Science in July 1990 (ES, 1990). OEPA approved closure certification on September 17, 1990 (TRW/Argo-Tech, 1991).

Wastes Managed: Wastes managed in this unit were:

Freon degreasing residue (F001)
Trichloroethylene (F001)
Tetrachloroethylene, PCE (F001)
Trichloroethane, TCE, still bottoms (F002)
MEK (F005)
Dioxane/MEK mixture (F005)
Ceramic slip (F008)
Corrosive solid (D002).

Release Controls: The unit was inside a building and was surrounded by a chain-link fence. The floor was wood over concrete.

History of Release: No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The unit was RCRA closed before the VSI. All the wood flooring has been removed. A torpedo-machining operation occupied the site during the VSI (PRC, 1991).

SWMU 4 **Satellite Hazardous Waste Drum Accumulation Areas**

Unit Description: Several satellite accumulation areas exist at the Argo-Tech facility. Each area consists of a single 55-gallon drum used to accumulate wastes generated by specific operations. When the drums are full they are transferred to either the Argo-Tech temporary hazardous waste drum storage area (SWMU 6) or the Airfoil Forging Textron hazardous waste drum storage area (SWMU 5). There are 14 satellite accumulation areas. All satellite accumulation areas are indoors. Photograph 5 in Attachment B shows this area.

Date of Startup: Unknown

Date of Closure: The units are still in operation.

Wastes Managed: Wastes managed in this unit are:

Freon degreasing residue (F001)
Trichloroethylene (F001)
Tetrachloroethylene (F001)
Trichloroethane still bottoms (F002)
Dioxane/MEK mixture (F005)
Waste paint
Waste micro strip B (methylene chloride), [F001]
Waste Turco (a toluene-based rubber coating), [F005]
Chlorinated oil (F001)
Solid waste Otto fuel (D003)
Xylene (F001)

Release Controls: The units are located indoors. Some units have dikes to act as secondary containment.

History of Release: No documented releases of hazardous wastes or hazardous constituents from these units were identified during the PA/VSI.

Observations: Each unit is located next to or near a point of waste generation. No evidence of staining was apparent during the VSI (PRC, 1991).

SWMU 5 **Airfoil Forging Textron Hazardous Waste Drum Storage Area**

Unit Description: This unit is adjacent to the former 2-B dock area in the northwest corner of building 26. The unit is indoors and measures approximately 50 by 50 feet. The floor is wood block concrete. The unit is surrounded by a 9-foot-high chain-link fence. The unit is used to store hazardous waste that is to remain in storage for fewer than 90 days. Photograph 6 in Attachment B shows this area.

Date of Startup: 1989

Date of Closure: The unit is still in operation.

Wastes Managed: Wastes managed in this unit are:

Waste paint (D001, D011)
Waste micro strip B (methylene chloride [F001])
Waste Turco (toluene-based rubber coating [F005])

Release Controls: The unit is located indoors. A 9-foot-high chain-link fence with a locked, sliding gate surrounds the area. An emergency spill kit with absorbent pads and a fire extinguisher are located nearby.

History of Release: No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: No evidence of leaking was observed during the VSI. Drums were stored on wood pallets. Access to the unit was controlled by a locked, chain-link fence (PRC, 1991).

SWMU 6 **Argo-Tech Temporary Hazardous Waste Drum Storage Area**

Unit Description: This unit is located in the wastewater treatment plant in building 4, bay D15. The storage area is a concrete pad, approximately 10 by 15 feet. The floor is sloped and has grated floor drains which lead to a central sump. Wastewater collected in the sump is pumped to a holding tank and then back through the wastewater treatment process. Storage capacity is approximately 30 drums. The unit has been used as a temporary storage area since Argo-Tech closed the 2-B dock hazardous waste drum storage area. A permanent storage area near the scupper area (SWMU 22) is

scheduled to be opened by the end of 1991 (Richardson, 1991e). Photograph 7 in Attachment B shows this area.

Date of Startup: 1989

Date of Closure: The unit is still in operation.

Wastes Managed: Wastes managed in this unit include waste solvents and still bottoms.

Release Controls: The concrete floor is sloped and has grated floor drains leading to a sump. The entrance way leading to the outside has a grated drain but has no dike.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unknown source was present in this area. VOCs (dichloroethene (DCE), trichloroethene (TCE), and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead above the site average were detected in one monitoring well located just northeast of this unit. Soil borings also detected VOCs (TCE, DCE, ethyl benzene, and xylene) in the soil. Cadmium, chromium, and lead were detected in soil borings at levels above the site average. Site averages for contaminants in ground water and soil were determined by Engineering-Science and are shown in Appendix D. One soil sample contained levels of lead above the extraction procedure (EP) toxicity threshold level of 100 mg/kg. Cyanide in the soils ranged from 0.79 mg/kg to 0.25 mg/kg. Soil gas samples of the plating sump area detected quantities of TCE, trichloroethane (TCA), tetrachloroethene (PCE), and vinyl chloride (ES, 1990).

Observations: The storage area appeared clean. Drums were stacked on wood pallets at the time of the VSI (PRC, 1991).

SWMU 7 **Cyanide Afterburner**

Unit Description: This unit is located just northwest of building 33A. The unit is connected to the torpedo test engines that burn Otto fuel. Torpedo testing generates both liquid and gaseous waste streams that contain cyanide. The gas is collected and enters the afterburner, which burns the gas at 1400°F and breaks the cyanide into CO_2 and N_2. The unit does have an air permit (No. 1318207468-P030) issued by OEPA under indefinite registration status. The permit establishes an emission limit for cyanide of 4 mg/m^3. Photograph 8 in Attachment B shows this area.

Date of Startup: The unit was installed in 1987.

Date of Closure: The unit is still in operation.

Wastes Managed: Cyanide wastes generated from torpedo test firing using Otto fuel are managed in this unit.

Release Controls: A temperature probe monitors the temperature of the afterburner to assure complete combustion of the cyanide into CO_2 and N_2.

History of Release: No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The unit appeared to be in good condition during the VSI (PRC, 1991).

SWMU 8 **Former Concrete Block Filter Area**

Unit Description: This unit formerly was used by TRW as part of its wastewater treatment system. The unit was located east of building 4. The unit consisted of a filter screen and dewatering lagoon designed to remove sludge from wastewaters generated at the facility. The filtrate was treated in the former wastewater treatment plant in building 4. Sludges were dewatered here before the filter press was installed in 1984. Photograph 9 in Attachment B shows this area.

Date of Startup: 1969

Date of Closure: The unit ceased operation in 1984.

Wastes Managed: Waste managed in this unit was electroplating and metal finishing wastewater sludge (F006).

Release Controls: The concrete block walls and floor served as containment for the wastewater and sludge.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unknown source was present in this area. VOCs (1,1,1-TCA; 1,1-DCE; 1,1-dichloroethane [DCA]; and tetrachloroethylene) were detected at concentrations of 100 parts per billion (ppb), 15 ppb, 13 ppb, and 7 ppb, respectively, in a monitoring well in this area. Levels above the site average of arsenic, chromium, and lead, at concentrations of 58 ppb, 477 ppb, and 258 ppb, respectively, also were detected in a monitoring well southeast of this unit. No VOCs, BTEX, or PCBs were detected in soil borings taken from this area. No metals at levels above the site and regional averages were not detected in soil borings. Soil gas sampling detected quantities of benzene, TCE, TCA, PCE, and vinyl chloride.

Observations: The unit was partially dismantled during the VSI. The area to the east of the unit was a grass field, and building 4 is to the west (PRC, 1991).

SWMU 9 **Chip Dock Area**

Unit Description: This unit is located outside near the central portion of the site, east of building 8 and northeast of buildings 29 and 35. The area measures approximately 70 by 100 feet and has an asphalt surface laid on concrete. The unit has several dumpsters in which scrap metal and metal cuttings are

stored before they are shipped off site for reclamation. Grated trench drains surround the perimeter of the unit and drain into a oil/water separator tank located under the chip dock area. Photographs 10 and 11 in Attachment B depict this unit.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: Metal scraps and cuttings coated with cutting oils are managed in this unit.

Release Controls: The metal scraps are stored in dumpsters on a asphalt floor laid over concrete. A trench drain surrounds the perimeter of the unit and drains into a oil/water separator tank located under the chip dock area.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unknown source was present in this area. VOCs (TCE, TCA, PCE, DCE, dichloroethane [DCA], and vinyl chloride) at concentrations ranging from 10,000 ppb to 130,000 ppb were detected in monitoring wells at 14 to 15 feet below grade. TCE at a concentration of 1,300 ppb also was detected in wells at depths of 30 feet, while a concentration of 12 ppb was detected at 50 feet. Toluene was detected at a concentration of 81 ppb. Lead chromium, arsenic, and mercury were detected in ground-water monitoring wells. VOCs (TCE, TCA, DCE, DCA, PCE) and PCBs were also detected in soil borings. Arsenic concentrations in the soil ranged from 6.5 mg/kg to 26 mg/kg. Cadmium concentrations ranged from 11 mg/kg to 210 mg/kg. Lead concentrations ranged from 6.2 mg/kg to 130 mg/kg. All values were below the EP toxicity threshold level except for one chromium and one lead sample (ES, 1990).

Observations: The floor of the unit looked very oily and there were numerous metal fillings embedded in the asphalt at the time of the VSI (PRC, 1991).

SWMU 10 **Trichloroethylene Aboveground Storage Tank**

Unit Description: This unit is east of building 15 and west of building 32. The unit consisted of a 500-gallon aboveground storage tank in a concrete-vaulted area. The tank contains spent TCE, which is fed to the solvent recovery still.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: Waste managed at this unit is TCE.

Release Controls: The tank is in an aboveground, vaulted concrete area. The walls and floor are concrete. The ceiling has grates.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated the presence in this area of contamination from an unknown

source. VOCs (TCA, PCE, DCE, and DCA) were detected in ground-water monitoring wells near the area. Lead, chromium, and arsenic at concentrations above the site average were detected in monitoring wells. Soil borings did not detect any contaminants. Soil gas samples indicated the presence of TCE, TCA, PCE, benzene, and vinyl chloride (ES, 1990).

Observations: The unit was not observed during the VSI.

SWMU 11 **Argo-Tech Wastewater Treatment Plant**

Unit Description: This unit is located in building 4. The unit has a concrete floor and occupies an area measuring 320 by 320 feet. In the floor of the unit, there are trench drains that lead to a sump. The unit treats wastewaters generated by the various tenants at the facility. The unit consists of two 750-gallon cyanide destruction tanks, two 2,000-gallon chrome reduction tanks, and two 9,000-gallon chemical precipitation/neutralization tanks. A flocculation and lamella clarifier removes sludge, which is sent to a filter press for dewatering. This wastewater treatment sludge (F006) is stored in a dumpster (SWMU 14) outside building 4 before it is taken off site for disposal. The treated water first is discharged to permitted Outfall 602, then to permitted Outfall 001, and finally to the storm sewer at East 222nd Street. (There were three outfalls [Outfalls 001, 601, and 602]) listed in the National Pollutant Discharge Elimination System ([NPDES]) permit application, but only two ([Outfalls 001 and 602]) are operational ([TRW, 1989]). Storm water from East 222nd Street goes to Lake Erie at two separate discharge locations (PRC, 1991). Treated wastewater is discharged at a rate of approximately 0.354 million gallons per day through NPDES Outfall 602 to a storm sewer (Argo-Tech, 1989). Photograph 7 in Attachment B depicts this unit.

Date of Startup: The unit began operation in 1968 and was replaced by the present system in 1986.

Date of Closure: The unit is still in operation.

Wastes Managed: The unit treats wastewaters from the various tenants at the facility. These wastewaters include acid and alkaline cleaning solutions; chrome, copper, nickel, and black-oxide plating solutions; anodizing solutions; cyanide stripping solutions; and nitric-hydrofluoric etching solutions.

Release Controls: The floor is sloped with grated floor drains leading to a sump. The entrance way leading to the outside has a grated drain but does not have a dike.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unidentified source was present in this area. VOCs (cis-1,2-DCE; TCE; trans-1,2-DCE; 1,1-DCE; and vinyl chloride at concentrations of 1400 ppb, 370 ppb, 58 ppb, 13 ppb, and 260 ppb, respectively) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead in concentrations above the site average were detected

in one monitoring well located just northeast of this unit. Concentrations of arsenic, chromium, and lead in that well were 58 ppb, 477 ppb, and 258 ppb, respectively. Soil borings also detected VOCs (TCE, DCE, ethylbenzene, and xylene) in the soil. TCE concentration ranged from 0.171 mg/kg to 23.5 mg/kg. Cis-1,2-DCE concentration ranged from 0.033 mg/kg to 4.43 mg/kg. Ethylbenzene and xylene were detected at concentrations of 0.012 mg/kg and 0.114 mg/kg, respectively. Cadmium, chromium, and lead were detected in soil borings at concentration levels above the site average. Cadmium levels ranged from 0.85 mg/kg to 17 mg/kg. Chromium levels ranged from 7.9 mg/kg to 53 mg/kg. Lead concentrations ranged from 4 mg/kg to 150 mg/kg. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Cyanide in the soils ranged from 0.79 mg/kg to 25 mg/kg. Soil gas samples of the plating sump area detected quantities of TCE, TCA, PCE, and vinyl chloride (ES, 1990).

Observations: The unit appeared to be well operated and maintained. All tanks and associated equipment were in good condition (PRC, 1991).

SWMU 12 **Plating Sumps**

Unit Description: This area is in the southeast corner of building 4. The unit consists of sumps designed to collect waste plating water that might result from spills or leaks in the plating tanks.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages plating wastewaters from the plating lines at the facility. These lines include chrome, copper, nickel, and black-oxide plating solutions; anodizing solutions; cyanide stripping solutions; and nitric-hydrofluoric etching solutions.

Release Controls: The sumps are concrete. All liquid collected in the sumps is pumped to the Argo-Tech wastewater treatment plant. The building acts as secondary containment.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unknown source was present in this area. VOCs (cis-1,2-DCE; TCE; trans-1,2-DCE, 1,1-DCE; and vinyl chloride at concentrations of 1400 ppb, 370 ppb, 58 ppb, 13 ppb, and 260 ppb, respectively) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead at concentrations above the site average were detected in one monitoring well located just northeast of this unit. Concentrations of arsenic, chromium, and lead in this well were 58 ppb, 477 ppb, and 258 ppb, respectively. Soil borings also detected VOCs (TCE; cis-1,2-DCE; ethylbenzene; and xylene) in the soil. TCE concentrations ranged from 0.171 mg/kg to 23.5 mg/kg. Cis-1,2-DCE concentrations ranged from 0.033 mg/kg to 4.43 mg/kg. Ethylbenzene and xylene were detected at

concentrations of 0.012 mg/kg and 0.114 mg/kg, respectively. Cadmium, chromium, and lead were detected in soil borings at levels above the site average. Concentrations of cadmium ranged from 0.85 mg/kg to 17 mg/kg. Chromium concentrations ranged from 7.9 mg/kg to 53 mg/kg. Lead concentrations ranged from 4 mg/kg to 150 mg/kg. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Cyanide in the soils ranged from 0.79 mg/kg to 25 mg/kg. Soil gas samples of the plating sump area detected quantities of TCE, TCA, PCE, and vinyl chloride (ES, 1990).

Observations: The unit appeared to be in good condition during the VSI (PRC, 1991).

SWMU 13 **Bulk Waste Otto Fuel Storage**

Unit Description: This unit is located in building 30. The unit consists of three 5,000-gallon aboveground storage tanks. The tanks store waste Otto fuel generated by torpedo testing. The tanks are located in a room that has cinderblock walls and a concrete floor. The floor has drains that are connected to the tanks, thus creating a closed system for spill control. The waste Otto fuel is not treated at the Argo-Tech facility; it is shipped to the U.S. Navy for disposal. Photograph 12 depicts this unit.

Date of Startup: 1987

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages waste Otto fuel and Otto fuel wastewaters.

Release Controls: The unit is located in a room that has cinderblock walls and a concrete floor. Floor drains in the room are connected to the holding tanks, thus creating a closed-loop spill-control system.

History of Release: No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The unit appeared to be in good condition at the time of the VSI (PRC, 1991).

SWMU 14 **Argo-Tech Electroplating Filter Cake Dumpster**

Unit Description: This unit is located east of building 4. It consists of a dumpster on a concrete roadway. The filter cake is stored in this dumpster and picked up by Envirite Corporation, a hazardous waste disposal firm, for disposal off site.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages electroplating wastewater treatment sludge (F006).

Release Controls: The unit is a dumpster on a concrete roadway. No secondary containment exists.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unidentified source was present in this area. VOCs (cis-1,2-DCE; TCE; trans-1,2-DCE; 1,1-DCE; and vinyl chloride at concentrations of 1400 ppb, 370 ppb, 58 ppb, 13 ppb, and 260 ppb, respectively) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead at concentrations above the site average were detected in one monitoring well located just northeast of this unit. Concentrations of arsenic, chromium, and lead in this well were 58 ppb, 477 ppb, and 258 ppb, respectively. Soil borings also detected VOCs (TCE, DCE, ethylbenzene, and xylene) in the soil. TCE concentrations ranged from 0.171 mg/kg to 23.5 mg/kg. Cis-1,2-DCE concentrations ranged from 0.033 mg/kg to 4.43 mg/kg. Ethylbenzene and xylene were detected at concentrations of 0.012 mg/kg and 0.114 mg/kg, respectively. Cadmium, chromium, and lead were detected in soil borings at concentration levels above the site average. Cadmium concentrations ranged from 0.85 mg/kg to 17 mg/kg. Chromium concentrations ranged from 7.9 mg/kg to 53 mg/kg. Lead concentrations ranged from 4 mg/kg to 150 mg/kg. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Concentrations of cyanide in the soils ranged from 0.79 mg/kg o 25 mg/kg. Soil gas samples of the plating sump area detected quantities of TCE, TCA, PCE, and vinyl chloride (ES, 1990).

Observations: The unit was not observed during the VSI.

SWMU 15 **Textron Kolene Wastewater Treatment System**

Unit Description: This unit is located in building 3. The unit treats wastewaters generated by the Kolene metal-finishing operation run by Textron. The unit consists of a metal precipitation/reduction process and an acid/base neutralization process that treat the wastewater. A filter press dewaters the wastewater. Dewatered filter cake is stored in a dumpster (SWMU 16) located east of building 4. Waste Kolene is stored in 55-gallon drums in 2-B dock (SWMU 5) before it is shipped off site for disposal. The Textron wastewater treatment plant discharges approximately 15,000 to 20,000 gallons per day of treated water to the Euclid sanitary sewer system.

Date of Startup: 1986

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages Kolene and acid wastewater.

Release Controls: Unknown

History of Release: No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The unit was not observed during the VSI.

SWMU 16 **Textron Filter Cake Dumpster**

Unit Description: This unit is located east of building 4. It consists of a dumpster on a concrete roadway.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages metal finishing filter cake (F006).

Release Controls: The unit is a dumpster on a concrete roadway. There is no secondary containment.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unidentified source was present in this area. VOCs (cis-1,2-DCE; TCE; trans-1,2-DCE; 1,1-DCE, and vinyl chloride at concentrations of 1400 ppb, 370 ppb, 58 ppb, 13 ppb, and 260 ppb, respectively) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead at concentrations above the site average were detected in one monitoring well located just northeast of this unit. Concentrations of arsenic, chromium, and lead in this well were 58 ppb, 477 ppb, and 258 ppb, respectively. Soil borings also detected VOCs (TCE, DCE, ethylbenzene, and xylene) in the soil. TCE concentrations ranged from 0.171 mg/kg to 23.5 mg/kg. Cis-1,2-DCE concentrations ranged from 0.033 mg/kg to 4.43 mg/kg. Ethylbenzene and xylene were detected at concentrations of 0.012 mg/kg and 0.114 mg/kg, respectively. Cadmium, chromium, and lead were detected in soil borings at concentration levels above the site average. Cadmium concentrations ranged from 0.85 mg/kg to 17 mg/kg. Chromium concentrations ranged from 7.9 mg/kg to 53 mg/kg. Lead concentrations ranged from 4 mg/kg to 150 mg/kg. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Cyanide concentrations in the soils ranged from 0.79 mg/kg o 25 mg/kg. Soil gas samples of the plating sump area detected quantities of TCE, TCA, PCE, and vinyl chloride (ES, 1990).

Observations: The unit was not observed during the VSI.

SWMU 17 **JP-4 Underground Storage Tank Farm**

Unit Description: This unit is located in the central portion of the site, between buildings 33 and 31. This unit consists of four underground storage tanks. There are two 10,000-gallon virgin fuel tanks, one 20,000-gallon dump tank, and one 10,000-gallon oil/water separator tank. Although there are both product and waste storage tanks in this unit, the entire tank farm was listed as one SWMU because reported releases could not be attributed to any single tank.

Several UST farms (SWMUs 18 through 21) previously were located near this area. Photograph 13 depicts this unit.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages JP-4 aviation fuel.

Release Controls: Unknown

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination was present in the area. The source of the contamination most likely was one or more of the USTs; however, the exact source is unknown. VOCs (BTEX) and PCBs have been detected in monitoring wells in this area. The maximum concentration detected during the most recent sampling (spring 1989) was 310 ppb benzene and 4100 ppb PCB-1248. Free-floating hydrocarbon layers up to three inches thick have been detected in three ground-water monitoring wells in this area. Concentrations of lead, chromium, and arsenic at levels above the site average were detected in one monitoring well. Concentrations of 124 ppb, 51 ppb, and 60 ppb were reported for lead, chromium, and arsenic, respectively. VOCs (xylene, and unidentified hydrocarbons) and PCBs were detected in soil borings taken from this area. The maximum concentration detected was 14 mg/kg of xylene, 100 mg/kg of unidentified hydrocarbons, and 90 mg/kg of PCBs. Lead levels in the soil ranged from 8.9 mg/kg to 50 mg/kg and were above the site average. Soil gas samples detected the presence of TCA, TCE, PCE, benzene, and vinyl chloride (ES, 1990).

Observations: The unit was covered with grass and gravel at the time of the VSI (PRC, 1991).

SWMU 18 **Former Underground Storage Tank Farm 1**

Unit Description: This area was located north of building 32. The area had 14 USTs, ranging in volume from 2,000 gallons to 5,000 gallons and containing virgin and spent aviation fuel. Although there were both virgin product and waste storage tanks in this unit, the entire tank farm was listed as one SWMU because reported releases could not be attributed to one tank.

Date of Startup: Unknown

Date of Closure: All tanks were removed at an unknown date (Richardson, 1991e).

Wastes Managed: The unit managed JP-4 aviation fuel.

Release Controls: Unknown

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that VOCs (BTEX) at a concentration of 310 ppb were

detected in a monitoring well near this area. Soil borings did not detect VOCs in the soil. Arsenic, cadmium, chromium, mercury, and lead levels were reported to be below or at the site average (Engineering-Science, 1990).

Observations: The unit was covered with grass at the time of the VSI (PRC, 1991).

SWMU 19 **Former Underground Storage Tank Farm 2**

Unit Description: This area was located between buildings 33 and 31 just southwest of the current JP-4 tank farm area (SWMU 17). There were five tanks, ranging in volume from 10,000 gallons to 20,000 gallons and containing virgin and spent fuels. Although there were both virgin product and waste storage tanks in this unit, the whole tank farm was listed as one SWMU because reported releases could not be attributed to any single tank.

Date of Startup: Unknown

Date of Closure: All tanks were removed in 1965 (Richardson, 1991e).

Wastes Managed: The unit managed JP-4 aviation fuel.

Release Controls: Unknown

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated free-floating hydrocarbon layers up to 3 inches thick have been detected in three ground water monitoring wells in this area. VOCs (BTEX) and PCBs have been detected in monitoring wells in this area as well. The maximum concentration detected during the most recent sampling episode (spring 1989) was 310 ppb benzene and 4100 ppb PCB-1248. Chromium levels in the soil to the north were above the site and regional values at a concentration of 33 mg/kg. Soil gas samples detected the presence of TCA, TCE, PCE, and vinyl chloride in an area north of building 31 near building 30A and 33 (ES, 1990).

Observations: The unit was covered with grass and gravel at the time of the VSI (PRC, 1991).

SWMU 20 **Former Underground Storage Tank Farm 3**

Unit Description: This area was located east of building 31. The area had 7 tanks containing various virgin and spent fuels and ranging in size from 2,000 to 5,000 gallons. Although there were both virgin product and waste storage tanks in this unit, the whole tank farm was listed as one SWMU because reported releases could not be attributed to any single tank.

Date of Startup: Unknown

Date of Closure: All tanks were removed in 1980 (Richardson, 1991e).

Wastes Managed: The unit managed JP-4 aviation fuel.

Release Controls: Unknown

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that VOCs (BTEX) and PCBs have been detected in monitoring wells in this area. The maximum concentration detected during the most recent sampling episode (spring 1989) was 310 ppb benzene and 4100 ppb PCB-1248. Free-floating hydrocarbon layers up to 3 inches thick have been detected in three ground-water monitoring wells in this area. Concentrations of lead, chromium, and arsenic at levels above the site average were detected in one monitoring well also. Concentrations of 124 ppb, 51 ppb, and 60 ppb, respectively, were reported for lead, chromium, and arsenic. VOCs (xylene and unidentified hydrocarbons) and PCBs were detected in soil borings taken from this area. The maximum concentrations were 14 mg/kg of xylene, 100 mg/kg of unidentified hydrocarbons, and 90 mg/kg of PCBs. Lead levels in the soil ranged from 8.9 mg/kg to 50 mg/kg and were above the site and regional values. Soil gas samples detected the presence of TCA, TCE, PCE, benzene, and vinyl chloride (ES, 1990).

Observations: The unit was covered with grass and gravel at the time of the VSI (PRC, 1991).

SWMU 21 **Former Underground Storage Tank Farm 4**

Unit Description: This area was located just off the northwest corner of building 30. The area had 8 USTs containing various fuels and ranging in volume from 500 to 3,000 gallons. Although there were both virgin product and waste storage tanks in this unit, the entire tank farm was listed as one SWMU because reported releases could not be attributed to any single tank.

Date of Startup: Unknown

Date of Closure: At least 6 tanks were removed at an unknown date. It is not known whether the remaining 2 tanks have been removed (Richardson, 1991e).

Wastes Managed: The unit managed JP-4 aviation fuel.

Release Controls: Unknown

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated that ground-water monitoring wells near the area detected the presence of vinyl chloride at a concentration of 11 ppb. Ground-water monitoring wells also detected the presence of lead, chromium, mercury, and arsenic at levels above the site average. Concentrations of 98 ppb, 230 ppb, 0.5 ppb, and 90 ppb, respectively, were reported for lead, chromium, mercury, and arsenic. Soil borings detected VOCs (TCE, TCA, DCE, PCE, and BTEX) in the soil to the northwest of these tanks. Arsenic, chromium, lead, and mercury levels in the soil were above the site and regional values. EP toxicity testing from one soil sample yielded 18 ppm of leachable lead.

Soil gas samples detected the presence of TCA, TCE, DCE, benzene, and vinyl chloride near the monitoring wells in this area (ES, 1990).

Observations: The unit was not observed during the VSI.

SWMU 22 **Scupper Area**

Unit Description: This area is located north of building 26. It consists of an enclosed concrete pad measuring approximately 15 by 30 feet. The unit is used to store combustible liquids and waste oils in 55-gallon drums. The pad has grating in front covering a sump and a scupper in back. A scupper is a fixture like a porthole designed to skim flammable liquids off water accumulated during firefighting operations. There is no drain in the unit.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: *The unit manages waste oils and flammable liquids.*

Release Controls: The pad has grating in front and a scupper at the back end. There is no drain in the unit.

History of Release: A remedial investigation report submitted by Engineering-Science in July 1990 indicated the presence of VOCs (TCE; 1,2-DCE; and total petroleum hydrocarbons [TPH] in soil borings taken from this area. TCE concentrations ranged from 60 mg/kg to concentrations below detection limit. Concentrations of 1,2-DCE ranged from 5 mg/kg to below the detection limit. TPH concentrations ranged from 58 mg/kg to 26,000 mg/kg (ES, 1990).

Observations: The unit was not inspected at the time of the VSI.

SWMU 23 **Waste Otto Fuel Drum Storage Area**

Unit Description: This unit is located in building 56. The unit stores both virgin and spent Otto fuel and wastes associated with torpedo testing (that is, protective clothing). The wastes are stored in 55-gallon drums on a concrete floor. Storage capacity for the unit is approximately 200 drums. Typically, between 5 and 10 drums store waste, and the rest store virgin Otto fuel.

Date of Startup: Unknown

Date of Closure: The unit is still in operation.

Wastes Managed: The unit manages waste Otto fuel and protective clothing worn during torpedo testing.

Release Controls: The wastes are stored in 55-gallon drums inside a building. The building acts as secondary containment.

History of Release:	No documented releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.
Observations:	The unit was not observed during the VSI.

SWMU 24	**Bay k-7 Sump**
Unit Description:	This unit is located on the west-central portion of the facility west of building 3. It consists of a storm drain sump.
Date of Startup:	Unknown
Date of Closure:	The unit is still in operation.
Wastes Managed:	The unit manages manufacturing process wastes.
Release Controls:	Unknown
History of Release:	A grab sample in the sump obtained by Engineering-Science indicated relatively high levels of semivolatiles (ranging from 3,800 mg/kg to 58,000 mg/kg) and PCBs at 140 mg/kg. Low concentrations of VOCs (ranging from 1 ppb to 8 ppb) and PCBs were detected in one water sample from the sump (ES, 1990).
Observations:	The unit was not observed during the VSI.

SWMU 25	**Building 24 and Associated Drain Lines**
Unit Description:	This area is located in the north-central portion of the facility, near buildings 24, 41, 45, and 26. Past operations in building 24 included mercury-cast testing. Currently, there are 2 aboveground JP-5 fuel storage tanks near the exterior of building 24. Photograph 14 shows this area.
Date of Startup:	Unknown
Date of Closure:	Mercury casting ceased in the 1950s (Richardson, 1991e).
Wastes Managed:	The unit managed mercury and other unknown wastes.
Release Controls:	Unknown
History of Release:	A remedial investigation report submitted by Engineering-Science in July 1990 indicated that levels of mercury above the site average were detected in monitoring wells in this area. No VOCs, BTEX, or PCBs were detected in monitoring wells in the area. Soil borings indicated the presence of VOCs (TCE; cis-1,2-DCE; PCE; 1,1,2,2-PCA; TPH; and toluene) in the soil. TCE concentrations ranged from 0.11 mg/kg to 14.5 mg/kg. Cis-1,2-DCE and PCE were detected at concentrations of 0.484 mg/kg and 0.021

mg/kg, respectively. 1,1,2,2-PCA and toluene were detected at concentrations of 0.6 mg/kg and 0.2 mg/kg, respectively. TPH concentrations ranged from 49 mg/kg to 780 mg/kg. Arsenic, cadmium, chromium, lead, and mercury were detected at levels above the site average. Arsenic concentrations ranged from 15 to 53 mg/kg. Cadmium was detected at a concentration of 3 mg/kg. Chromium concentrations ranged from 10 to 110 mg/kg. Lead concentrations ranged from 8 mg/kg to 113 mg/kg. Mercury concentrations ranged from 0.2 mg/kg to 6.6 mg/kg. Some soil samples lead and mercury concentrations above the EP toxicity threshold levels (100 mg/kg and 4 mg/kg, respectively). However, EP toxicity testing on these samples yielded no detectable quantities of leachable lead or mercury. Samples from drain lines in building 24 detected lead, mercury, cadmium, and chromium at levels above the site average (ES, 1990).

Observations: The inside of this unit was not observed during the VSI.

4.0 AREAS OF CONCERN

PRC identified 8 AOCs during the PA/VSI. These are discussed below.

AOC 1 **Railroad Spur/Lobby 3**

This AOC is located north of building 15 and northeast of buildings 19 and 24. Most of the area currently is grass-covered. In the 1950s, this area was used to make mercury castings or moldings (mer-cast). The process was similar to the lost-wax method for making molds. A 15,000-gallon aboveground storage tank was located south of building 19. The tank contained TCA, which was used as a refrigerant in the mer-cast process. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that VOCs (TCE; trans-1,2-DCE; and vinyl chloride) were detected at concentrations of 5000 ppb, 1600 ppb, and 290 ppb, respectively in ground-water monitoring wells in this area. Monitoring wells also detected the presence of lead, arsenic, chromium, and mercury at levels above the site average. Lead concentrations ranged from 98 to 114 ppb. Arsenic concentrations ranged from 83 to 90 ppb. Total mercury concentrations ranged from 0.3 to 0.5 ppb. Total chromium was detected at a concentration of 230 ppb. Soil borings also indicated the presence of VOCs (TCE; TCA; trans-1,2-DCE; PCE; and BTEX) in the soil. TCE concentrations ranged from 0.3 mg/kg to 1.27 mg/kg. TCA, DCE, and PCE were detected at concentrations of 0.008 mg/kg, 0.23 mg/kg, and 0.75 mg/kg, respectively. Benzene and ethylbenzene were detected at concentrations of 0.11 mg/kg and 0.22 mg/kg, respectively. Arsenic, chromium, mercury, and lead were detected in the soil at levels above the site average. Concentrations of arsenic in soils ranged from 5.8 mg/kg to 120 mg/kg. Chromium concentrations ranged from 8.6 mg/kg to 1800 mg/kg. Lead concentrations ranged from 10 to 35,000 mg/kg. Concentrations of mercury ranged from 0.3 mg/kg to 2 mg/kg. EP toxicity testing on the soils indicated no leachable amounts of chromium, arsenic, or mercury. EP toxicity testing on one soil sample yielded 18 ppm of leachable lead. Soil gas sampling detected the presence of TCA, TCE, PCE, vinyl chloride, and benzene near the monitoring wells in this area (ES, 1990).

AOC 2 **Post 1**

Post 1 is located in the south-central portion of the facility, southeast of building 4 and northwest of building 16. The area was formerly a fire truck garage. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that 1,1,1-TCA and 2-hexanone were detected in ground-water monitoring wells in this area. 1,1,1-TCA was present at 120 ppb during a July 1988 sampling event but was not detected in April 1989. 2-Hexanone was present at 14 ppb in April 1989. No metals at levels above the site average were detected (ES, 1990).

AOC 3

Building 7 Tank Farm

This area is located in the northwest corner of the facility, near the south-southwest corner of building 7. The area includes former and current underground fuel storage tanks. The area also has aboveground storage tanks in a compound that is fenced and has a concrete dike. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unidentified source was present in this area. VOCs, primarily chloroform; 1,1-DCE; cis-1,2-dichlorobenzene (DCB); PCE; TCE; 1,1,1-TCA; and vinyl chloride, were detected in monitoring wells in this area, at concentrations ranging from 5 ppb to 320 ppb. BTEX compounds were detected at concentrations of 12 ppb. Soil borings also indicated the presence of VOCs (BTEX compounds; TCE; trans-1,2-DCE; 1,1-DCA; dichlorobenzene; and TPH) in the soil. Trans-1,2-DCE concentrations ranged from 0.015 mg/kg to 0.691 mg/kg. 1,1-DCA was detected at concentrations ranging from 0.018 mg/kg to 1.230 mg/kg. TCE concentrations ranged from 0.022 mg/kg to 0.027 mg/kg. BTEX compounds were detected at concentrations ranging from 0.017 mg/kg to 8.9 mg/kg. DCB was detected at a concentration of 8.4 mg/kg. TPH concentrations ranged from 5.3 mg/kg to 290 mg/kg. Arsenic and mercury were detected at levels above the site average. Concentrations of arsenic ranged from 10 mg/kg to 59 mg/kg. Mercury concentrations ranged from 0.2 mg/kg to 0.78 mg/kg. Cyanide at concentrations of 0.39 mg/kg and 0.74 mg/kg was also detected in two soil borings (ES, 1990).

AOC 4

Forge Shop Addition

This area is located in the west-central portion of the facility, along the perimeter of building 28. The area housed forging presses and hydraulic equipment. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that contamination from an unidentified source was present in this area. Soil borings in this area detected VOCs (TCE; trans-1,2-DCE; and cis-1,2-DCE) at concentrations ranging from 0.011 mg/kg to 1.25 mg/kg. Arsenic, cadmium, and lead were detected in the soil borings at levels above the site average. Arsenic concentrations ranged from 3.2 mg/kg to 53 mg/kg. Cadmium concentrations ranged from 2 mg/kg to 61 mg/kg. Lead concentrations ranged from 16 mg/kg to 6400 mg/kg. Several lead samples were found to be at concentrations above the EP toxicity threshold limit of 100 mg/kg. EP toxicity testing on the soil yielded leachable lead quantities of 0.22 mg/kg and 0.16 mg/kg. Cyanide was also detected at levels ranging from 0.2 mg/kg to 0.9 mg/kg. A sewer sample obtained from the southern side of the building indicated levels of chromium (66 mg/kg) and lead (340 mg/kg) above the site averages (ES, 1990).

AOC 5

Colwel Fill Area

This unit is located in the east-central portion of the site, north of building 31 and south of the softball diamonds. Aerial photographs of the area taken between 1953 and 1956 indicate that the area was used as a type of

landfill or refuse dump. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that no significant levels of VOCs, semivolatiles, pesticides, PCBs, phenols, metals, or cyanide were detected in the ground water. Arsenic, chromium, lead, and mercury were detected in soil borings at levels above the site average. Arsenic concentrations ranged from 11 mg/kg to 38 mg/kg. Concentrations of lead ranged from 4.7 mg/kg to 89 mg/kg. Mercury concentrations ranged from 0.1 mg/kg to 24 mg/kg. Chromium and mercury were detected at levels above the EP toxicity threshold limit of 100 mg/kg and 4 mg/kg, respectively. Cyanide was detected at 4.65 mg/kg (ES, 1990).

AOC 6 **Colwel Complex**

This unit formerly was located in buildings 37, 38, and 40. TRW occupied the complex until 1986, when it was bought by Material Manufacturing Technology Center (MMTC). Building 38 housed a boiler, while buildings 37 and 40 housed offices, labs, and a pilot plant. MMTC (OHD 153 916 978), which is the compressor division of Air Forging Textron, used the site as a research and development lab for manufacturing airfoil blades until the end of 1990. There is no direct ground-water monitoring data for this area. A remedial investigation report submitted by Engineering-Science in July 1990 indicated that detectable quantities of PCBs and xylene were detected in the soil borings near building 40. Soil borings also indicated the presence near buildings 38 and 40 of arsenic, lead, and chromium at levels above the site average. Arsenic concentrations ranged from 6.5 mg/kg to 48 mg/kg. Lead concentrations ranged from 3 to 130 mg/kg. Chromium concentrations ranged from 8 mg/kg to 210 mg/kg. Mercury at levels ranging from 0.09 mg/kg to 0.73 mg/kg was detected near building 40. Levels of chromium near building 38 and 40 were above the EP toxicity threshold level (ES, 1990).

AOC 7 **Compressor Blowdown Area**

This area is located just outside of building 22. Compressed air containing small amounts of oil was exhausted onto the soil in this area. In 1990, a containment box was installed to prevent contamination of the soil. A remedial investigation report submitted by Engineering-Science in July 1990 indicated the presence of VOCs (PCE and TPH) in soil borings in the area. PCE was detected at concentrations of 13 mg/kg and TPH at concentrations of 170 mg/kg (ES, 1990).

AOC 8 **Former Underground Storage Tank Farm 5**

This area was located outside building 26, near 2-B dock. The area had four 2,000-gallon USTs containing fuel and oil. A remedial investigation report submitted by Engineering-Science in July 1990 indicated the presence of VOCs (TCE; 1,2-DCE; and TPH) in soil borings taken from this area. TCE concentrations ranged from 60 mg/kg to below the detection limit. Concentrations of 1,2-DCE ranged from 5 mg/kg to below the detection limit. TPH concentrations ranged from 58 mg/kg to 26,000 mg/kg. All tanks were removed in 1980 (ES, 1990).

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 25 SWMUs and 8 AOCs at the Argo-Tech facility. Background information on the facility's location, operations, waste generating processes, release history, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, release history, and observed condition, is discussed in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 3 identifies the SWMUs and AOCs at the facility and suggests further action.

SWMU 1 **Former Building 49, Underground Storage Tank**

Conclusions: The building was located in a fenced compound and was used for torpedo testing. The unit consisted of two test-firing cells, a storage area for Otto fuel, and a 1,000-gallon underground wastewater separation tank. Wastewater containing liquid fuel residue and cyanide is generated by torpedo test firing. Until late 1985, the wastewater was discharged through the 1,000-gallon underground steel storage tank. Liquid residues of unburned fuel were separated in the tank and hauled off site for disposal. The operation was moved to building 33 in 1987. Building 49 was demolished in 1989 (ES, 1990a). Remediation and RCRA closure activities for this unit began in August 1989 and were certified complete by Engineering-Science in July 1990. The unit poses a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; all contaminated soil and sediment from the nearby runoff stream have been removed and incinerated off site. RCRA closure was certified by Engineering-Science in July 1990.

Surface Water: Low; all contaminated soil and sediment from the nearby runoff stream have been removed and incinerated off site. RCRA closure was certified by Engineering-Science in July 1990.

Air: Low; the unit was demolished in 1989 and certified closed in July 1990. Wastes no longer are generated or stored at this unit.

On-site Soil: Low; all contaminated soil and sediment from the nearby runoff stream has been removed and incinerated off site. RCRA closure was certified by Engineering-Science in July 1990.

Recommendations: PRC recommends no further action at this time.

Table 3

SWMU and AOC Summary

SWMU Name	Operational Dates	Evidence of Release	Suggested Further Action
Former Building 49, Underground Storage Tank	1965 - 1987	Evidence of a release in 1985 was noted in the file material. No visible evidence of a release was observed during the VSI.	None
Building 45, Former Hazardous Waste Drum Storage Area	Unknown - 1985	None	None
Dock 2-B, Former TRW Hazardous Waste Drum Storage Area	1981 - 1990	None	None
Satellite Hazardous Waste Drum Accumulation Areas	Unknown - present	None	None
Airfoil Forging Textron Hazardous Waste Drum Storage Area	1989 - present	None	None
Argo-Tech Temporary Hazardous Waste Drum Storage Area	1989 - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Cyanide Afterburner	1987 - present	None	None
Former Concrete Block Filter Area	1969 - 1984	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Chip Dock Area	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Trichloroethylene Aboveground Storage Tank	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit.	Conduct additional sampling of soil and ground water.

Table 3 (Continued)

SWMU and AOC Summary

SWMU Name	Operational Dates	Evidence of Release	Suggested Further Action
Argo-Tech Wastewater Treatment Plant	1968 - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Plating Sumps	Unknown - present	Engineering-Science reported VOCs and metals in the soil and ground water in this area. No visible evidence of a release was noted during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Bulk Waste Otto Fuel Storage	1987 - present	None	None
Argo-Tech Electroplating Filter Cake Dumpster	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Textron Kolene Wastewater Treatment System	1986 - present	None	None
Textron Filter Cake Dumpster	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
JP-4 Underground Storage Tank Farm	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives. Conduct leak testing of tanks.

Table 3 (Continued)

SWMU and AOC Summary

SWMU Name	Operational Dates	Evidence of Release	Suggested Further Action
Former Underground Storage Tank Farm 1	Unknown	Engineering-Science reported VOCs in the ground water and soil in this area. No visible evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Former Underground Storage Tank 2	Unknown - 1965	Engineering-Science reported VOCs and PCBs in the ground water in this area. Elevated chromium levels were detected to the north of this area. No visible evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and potential remedial alternatives.
Former Underground Storage Tank Farm 3	Unknown - 1980	Engineering-Science reported VOCs and metals in the ground water and soil in this area. No visible evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives.
Former Underground Storage Tank Farm 4	Unknown	Engineering-Science reported VOCs and metals in the ground water and soil in this area. No visible evidence of a release was observed during the VSI.	Include this SWMU as part of a CMS to identify and evaluate potential remedial alternatives. Verify that all tanks have been removed.
Scupper Area	Unknown - present	Engineering-Science reported VOCs and metals in both ground water and soil near this unit. No evidence of a release was observed during the VSI.	Conduct additional sampling of soil and ground water.
Waste Otto Fuel Drum Storage Area	Unknown - present	None	None
Bay k-7 Sump	Unknown - present	Engineering-Science reported semivolatiles and PCBs in the sediment in the sump.	Remove soil and sediment in the sump and dispose of it in an approved manner. Conduct sampling to determine whether there have been releases to soil or ground water.

Table 3 (Continued)

SWMU and AOC Summary

SWMU Name	Operational Dates	Evidence of Release	Suggested Further Action
Building 24 and Associated Drain Lines	Unknown - 1950s	Engineering-Science reported mercury in the ground water. VOCs and metals were detected in soil near this unit. No visible evidence of a release was observed during the VSI.	Conduct additional sampling of soil and ground water in this area.

Table 3 (Continued)

SWMU and AOC Summary

AOC Name	Operational Dates	Evidence of Release	Suggested Further Action
Railroad Spur/Lobby 3	1950s	Engineering-Science reported VOCs and metals in the soil and ground water in this area. No visible evidence of a release was observed during the VSI.	Conduct additional sampling of soil and ground water in this area. Remediation of the soil and ground water should be considered.
Post 1	Unknown	Engineering-Science reported VOCs in the ground water near the unit.	Conduct additional sampling of the ground water in this area. Sampling of the soil should be conducted.
Building 7 Tank Farm	Unknown - present	Engineering-Science reported VOCs and metals in the soil and ground water in this area. No visible evidence of a release was observed during the VSI.	Conduct additional sampling of soil and ground water in this area.
Forge Shop Addition	Unknown - present	Engineering-Science reported VOCs and metals in the soil near this unit.	Conduct a CMS to identify and evaluate potential remedial alternatives.
Colwel Fill Area	1953 - 1956	Engineering-Science reported VOCs, semivolatiles, other organics, pesticides, PCBs, phenols, metals, and cyanide in the ground water in this area. Metals also were detected in the soil. No visible evidence of a release was observed during the VSI.	Conduct a CMS to identify and evaluate potential remedial alternatives.
Colwel Complex	Unknown - 1990	Engineering-Science reported PCBs, xylene, and metals in the soil in this area. No visible evidence of a release was observed during the VSI.	Conduct a CMS to identify and evaluate potential remedial alternatives.
Compressor Blowdown Area	Unknown - present	Engineering-Science reported VOCs in the soil in this area.	Conduct ground-water sampling and additional soil sampling in this area.
Former Underground Storage Tank Farm 5	Unknown - 1980	Engineering-Science reported VOCs in the soils near this area.	Conduct ground-water sampling and additional soil sampling in this area.

SWMU 2 **Building 45, Former Hazardous Waste Drum Storage Area**

Conclusions: The unit was constructed in the 1940s as a rifle test-firing target range. The walls and floors of the building are constructed of concrete. The unit is divided into two separate areas (A and B) by a concrete wall. Area A is 315 square feet and area B is 420 square feet. The unit was used to store 55-gallon drums of hazardous wastes. RCRA closure of this unit was certified by Engineering-Science in July 1990. The unit poses a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the unit is indoors and wastes are no longer stored in it. The building acted as secondary containment. The unit was certified closed by Engineering-Science in July 1990.

Surface Water: Low; the unit is indoors and wastes are no longer stored in it. The distance to the nearest surface water limits the potential of a release to this medium. The unit was certified closed by Engineering-Science in July 1990.

Air: Low; the unit is indoors and wastes are no longer stored in it. The unit was certified closed by Engineering-Science in July 1990.

On-site Soil: Low; the unit is indoors and wastes are no longer stored in it. The unit was certified closed by Engineering-Science in July 1990.

Recommendations: PRC recommends no further action at this time.

SWMU 3 **Dock 2-B, Former TRW Hazardous Waste Drum Storage Area**

Conclusions: The area had a wood-block floor on a concrete base and occupied approximately 8,100 square feet. About 2100 square feet of this area were used for storage of hazardous waste. This area was enclosed by a 9-foot-high chain-link fence with a sliding gate (ES, 1988). The unit poses a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the unit is indoors and wastes are no longer stored in it. The unit was certified closed by Engineering-Science in July 1990.

Surface Water: Low; the unit is indoors and wastes are no longer stored in it. The distance to the nearest surface water limits the potential of a release to this medium. The unit was certified closed by Engineering-Science in July 1990.

Air: Low; the unit is indoors and wastes are no longer stored in it. The unit was certified closed by Engineering-Science in July 1990.

On-site Soil: Low; the unit is indoors and wastes are no longer stored in it. The unit was certified closed by Engineering-Science in July 1990.

Recommendations: PRC recommends no further action at this time.

SWMU 4 **Satellite Hazardous Waste Drum Accumulation Areas**

Conclusions: Each area consists of a single 55-gallon drum used to accumulate wastes generated by specific operations. When the drums are full they are transferred to either the Argo-Tech hazardous waste drum storage area (SWMU 6) or the Airfoil Forging Textron hazardous waste drum storage area (SWMU 5). The areas pose a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the units are indoors. The building acts as secondary containment.

Surface Water: Low; the units are indoors. The building acts as secondary containment. The distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the units are indoors. The building acts as secondary containment.

On-site Soil: Low; the units are indoors. The building acts as secondary containment.

Recommendations: PRC recommends no further action at this time.

SWMU 5 **Airfoil Forging Textron Hazardous Waste Drum Storage Area**

Conclusions: This unit is adjacent to the former 2-B dock area in the northwest corner of building 26. The unit is indoors and measures approximately 50 by 50 feet. The floor is wood block over by concrete. The unit is surrounded by a 9-foot-high chain-link fence. The unit is used for storage of hazardous waste that is to remain in storage for fewer than 90 days. The unit poses low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the unit is indoors. The building acts as secondary containment.

Surface Water: Low; the unit is indoors. The building acts as secondary containment. The distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors. The building acts as secondary containment.

On-site Soil: Low; the unit is indoors. The building acts as secondary containment.

Recommendations: PRC recommends no further action at this time.

SWMU 6 **Argo-Tech Temporary Hazardous Waste Drum Storage Area**

Conclusions: The storage area is a concrete pad approximately 10 by 15 feet. The floor is sloped and has grated floor drains which lead to a central sump. Wastewater collected in the sump is pumped to a holding tank and then back through the wastewater treatment system. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCE, TCE, and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels above the site average of arsenic, chromium, and lead were detected in one monitoring well located just northeast of this unit.

Surface Water: The potential for release to this medium is low. The distance to the nearest surface water limits the potential of a release to this medium.

Air: The potential for release to this medium is low. The wastes are contained in sealed drums.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (TCE, DCE, ethyl benzene, and xylene) in the soil. Cadmium, chromium, and lead were detected in soil borings at levels above the site average. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Concentrations of cyanide in the soils ranged from 0.79 mg/kg to 0.25 mg/kg (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study (CMS). Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 7 **Cyanide Afterburner**

Conclusions: The unit is connected to the torpedo test engines that burn Otto fuel. Torpedo testing generates both liquid and gaseous waste streams that contain cyanide. The gas is collected and enters the afterburner which burns the gas at 1400°F and breaks the cyanide into CO_2 and N_2. The unit poses a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the unit is located on a concrete pad and manages only waste gases.

Surface Water: Low; the unit is located on a concrete pad and manages only waste gases.

Air: Low; the unit has a temperature probe that monitors temperature to assure complete combustion of cyanide waste gases.

On-site Soil: Low; the unit is located on a concrete pad and manages only waste gases.

Recommendations: PRC recommends no further action at this time.

SWMU 8 **Former Concrete Block Filter Area**

Conclusions: This unit formerly was used by TRW as part of its wastewater treatment process. The unit was located east of building 4. The unit consisted of a filter screen and dewatering lagoon designed to remove sludge from wastewaters generated at the facility. The filtrate was treated in the former wastewater treatment plant in building 4. Sludges were dewatered at this unit before the filter press was installed in 1984. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (TCA, DCE, DCA, and PCE) were detected in a monitoring well in this area. Arsenic, chromium, and lead also were detected in a monitoring well southeast of this unit.

Surface Water: The potential for release to this medium is low. The distance to the nearest surface water limits the potential of a release to this medium.

Air: The potential for release to this medium is low. The area no longer manages waste.

On-site Soil: Low; Engineering-Science reported that no VOCs, BTEX, or PCBs were detected in soil borings taken from this area. No metals at levels above the site and regional averages were detected in soil borings (ES, 1990).

Recommendations: Available sampling data indicates that the concentrations of VOCs (1,1,1-TCA; 1,1-DCE; and PCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study (CMS). Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 9 **Chip Dock Area**

Conclusions: The area measures approximately 70 by 100 feet and has an asphalt surface underlain by concrete. The unit has several dumpsters where scrap metal and metal cuttings are stored before they are shipped off site for reclamation. Grated trench drains surround the unit and drain into a

oil/water separator tank located under the chip dock area. The unit poses a low threat of current or future releases. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (TCE, TCA, PCE, DCE, DCA, and vinyl chloride) at concentrations ranging from 10,000 ppb to 130,000 ppb were detected in monitoring wells at 14 to 15 feet below grade. TCE also was detected in wells at depths of 30 feet and 50 feet. Toluene was detected at 81 ppb. Ground-water monitoring wells also detected the presence of lead, chromium, arsenic, and mercury at levels above the site average.

Surface Water: The potential for releases to this medium is low. The distance to the nearest surface water limits the potential for releases to this medium.

Air: The potential for releases to this medium is low.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (TCE, TCA, DCE, DCA, PCE, and PCBs) in the soil. Arsenic, cadmium, chromium, and lead were detected in the soil at levels above the site average. All values were below the EP toxicity threshold level except for one chromium and one lead sample (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs and metals (arsenic, chromium, mercury, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. In addition, cadmium concentrations in the soil also exceeded the action levels. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 10 **Trichloroethylene Aboveground Storage Tank**

Conclusions: The unit consisted of a 500-gallon aboveground storage tank in a concrete-vaulted area. The tank contains spent TCE, which is fed to the solvent recovery still. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs were detected in ground-water monitoring wells near the area. Ground-water monitoring wells also indicated the presence of lead, chromium, and arsenic at levels above the site average.

Surface Water: The potential for releases to this medium is low. The distance to the nearest surface water limits the potential for releases to this medium.

Air: The potential for releases to this medium is low. The waste is contained in a sealed tank.

On-site Soil: Engineering-Science reported that soil borings did not detect any contaminants in the soil in this area. The potential for future release to this medium is low. The unit is on a concrete pad and waste is contained in a sealed tank.

Recommendations: PRC recommends additional sampling in the area to determine the extent of ground-water contamination.

SWMU 11 **Argo-Tech Wastewater Treatment Plant**

Conclusions: The unit has a concrete floor and occupies an area measuring 320 by 320 feet. In the floor, there are trench drains that lead to a sump. The unit treats wastewaters generated by the various tenants at the facility. The unit consists of cyanide destruction tanks, chrome reduction tanks, and chemical precipitation/neutralization tanks. A flocculation and lamella clarifier removes sludge, which is sent to a filter press for dewatering. This metal finishing sludge (F006) is stored in a dumpster (SWMU 14) outside building 4 until it is taken off site for disposal. Treated wastewater is discharged at a rate of approximately 0.354 million gallons per day through NPDES Outfall 602 to a storm sewer (Argo-Tech, 1989). Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCE, TCE, and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels of arsenic, chromium, and lead at concentrations above the site average were detected in one monitoring well located just northeast of this unit.

Surface Water: The potential for release to this medium is low. The distance to the nearest surface water limits the potential of a release to this medium.

Air: The potential for release to this medium is low. The building acts as secondary containment.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (TCE, DCE, ethyl benzene, and xylene) in the soil. Cadmium, chromium, and lead at levels above the site average were detected in soil borings. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Concentrations of cyanide in the soils ranged from 0.79 mg/kg 0.25 mg/kg. Cadmium, chromium, and lead were detected in soil borings at levels above the site average. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near

this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study (CMS). Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 12 **Plating Sumps**

Conclusions: This area is located in the southeast corner of building 4. The unit consists of sumps designed to collect waste plating waters that might result from spills or leaks in the plating tanks. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCE, TCE, and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels above the site average of arsenic, chromium, and lead also were detected in one monitoring well located northeast of this unit.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors. The building acts as secondary containment.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (TCE, DCE, and BTEX) in the soil. Cadmium, chromium, and lead at levels above the site average were detected in soil borings. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Cyanide in soils ranged from 0.79 mg/kg to 25 mg/kg.

Recommendations: Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives. PRC also recommends that the integrity of the sumps be checked.

SWMU 13 **Bulk Waste Otto Fuel Storage**

Conclusions: The unit consists of three 5,000-gallon aboveground storage tanks. The tanks store waste Otto fuel generated by torpedo testing. They are located in a room that has cinderblock walls and a concrete floor. The floor has drains that are connected to the tanks thus creating a closed system for spill control. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Low; the unit is indoors and stands on a concrete floor.

Surface Water: Low; the distance to surface water limits the potential of a release to this medium.

Air: The potential for a release to this medium is low. The wastes are contained in sealed tanks. The building acts as secondary containment.

On-site Soil: Low; the unit is indoors and stands on a concrete floor.

Recommendations: PRC recommends no further action at this time.

SWMU 14 **Argo-Tech Electroplating Filter Cake Dumpster**

Conclusions: This unit is located east of building 4. It is a dumpster on a concrete roadway. The filter cake is stored in this dumpster and picked up by Envirite for disposal off site. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCE, TCE, and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels above the site average of arsenic, chromium, and lead were detected in one monitoring well located just northeast of this unit.

Surface Water: The potential for release to this medium is low. The distance to the nearest surface water limits the potential of a release to this media.

Air: The potential for release to this medium is low. The wastes do not volatilize readily.

On-site Soil: Engineering-Science reported that soil borings also detected VOCs (TCE, DCE, ethyl benzene, and xylene) in the soil. In soil borings, cadmium, chromium, and lead were detected at levels above the site average. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Cyanide in the soils ranged from 0.79 mg/kg to 0.25 mg/kg (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 15 **Textron Kolene Wastewater Treatment System**

Conclusions: The unit treats wastewaters generated by the Kolene metal finishing operation run by Textron. The unit consists of a metal precipitation/ reduction and an acid/base neutralization process to treat the wastewater.

A filter press dewaters the wastewater. Dewatered filter cake is stored in a dumpster (SWMU 16) located east of building 4. It is taken offsite for disposal by Envirite. Waste Kolene is stored in 55-gallon drums in Airfoil Forging Textron hazardous waste drum storage area (SWMU 5) before it is shipped off site for disposal. The Textron wastewater treatment plant discharges approximately 15,000 to 20,000 gallons per day of treated water to the Euclid sanitary sewer system. The unit poses a low threat of current or future releases. The probability of a release to environmental media is summarized below.

Ground Water: Low; the unit is indoors and discharges treated wastewater to the sanitary sewer system.

Surface Water: Low; the unit is indoors. The distance to surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors. The building acts as secondary containment.

On-site Soil: Low; the unit is indoors. The building acts as secondary containment and limits the potential of a release to this medium.

Recommendations: PRC recommends no further action at this time.

SWMU 16 **Textron Filter Cake Dumpster**

Conclusions: This unit is located east of building 4. It is a dumpster on a concrete roadway. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCE, TCE, and vinyl chloride) were detected in one monitoring well in the shallow subsurface adjacent to the plating area in building 4. Levels above the site average of arsenic, chromium, and lead were detected in one monitoring well located just northeast of this unit.

Surface Water: The potential for release to this medium is low. The distance to the nearest surface water limits the potential of a release to this medium.

Air: The potential for release to this medium is low. The wastes do not volatilize readily.

On-site Soil: Engineering-Science reported that soil borings also detected VOCs (TCE, DCE, ethyl benzene, and xylene) in the soil. Cadmium, chromium, and lead at levels above the site average were detected in soil borings. One soil sample contained levels of lead above the EP toxicity threshold level of 100 mg/kg. Concentrations of cyanide in the soils ranged from 0.79 mg/kg to 25 mg/kg (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs (DCE and TCE) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 17 **JP-4 Underground Storage Tank Farm**

Conclusions: This unit consists of four underground storage tanks. There are two 10,000-gallon virgin fuel tanks, one 20,000-gallon dump tank, and one 10,000-gallon oil/water separator tank. Several UST farms (SWMUs 18 through 21) previously were located near this area. Observed releases to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (PCBs and BTEX) have been detected in monitoring wells in this area. Free-floating hydrocarbon layers up to 3 inches thick have been detected in 3 ground-water monitoring wells in this area. Concentrations of lead, chromium, and arsenic were detected at levels above the site average in one monitoring well as well.

Surface Water: The potential for a release to this medium is low. The distance to surface water limits the potential of a release to this medium.

Air: The potential for a release to this medium is low. The wastes are contained in sealed tanks underground.

On-site Soil: Engineering-Science reported that VOCs (xylene, and unidentified hydrocarbons) and PCBs were detected in soil borings taken from this area. Lead levels in the soil were above the site and regional values.

Recommendations: Available sampling data indicate that the concentrations of VOCs (benzene) PCBs, and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. PCB concentrations in the soil also have exceeded the proposed action levels. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives. PRC also recommends that the tanks be tested for leaks and to determine their integrity.

SWMU 18 **Former Underground Storage Tank Farm 1**

Conclusions: This area was located northeast of building 32. The area had 14 USTs, ranging in volume from 2,000 gallons to 5,000 gallons and containing both virgin and spent aviation fuel. Observed releases to the ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (BTEX) were detected in monitoring wells near this area.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; all tanks were removed and the area currently is covered with grass.

On-site Soil: Low; Engineering-Science reported that soil borings did not detect VOCs in the soil. Arsenic, cadmium, chromium, mercury, and lead levels were reported to be below or consistent with the site average (ES, 1990).

Recommendations: Available sampling data indicate that the concentrations of VOCs (benzene) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 19 **Former Underground Storage Tank Farm 2**

Conclusions: This area was located between buildings 33 and 31, just southwest of the current JP-4 tank farm area (SWMU 17). There were five tanks, ranging in volume from 10,000 gallons to 20,000 gallons and containing various fuels. Observed releases to the ground water and soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that free-floating hydrocarbon layers up to 3 inches thick have been detected in 3 ground-water monitoring wells in this area. BTEX and PCBs have been detected in monitoring wells in this area as well.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; all tanks were removed and the area currently is covered with grass.

On-site Soil: Engineering-Science reported that chromium levels in the soil to the north were above the site and regional values.

Recommendations: Available sampling data indicate that the concentrations of VOCs (benzene) and PCBs in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 20 **Former Underground Storage Tank Farm 3**

Conclusions: This area was located east of building 31. It had 7 tanks, containing various virgin and spent fuels and ranging in size from 2,000 to 5,000 gallons. Observed releases to the ground water and soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that free-floating hydrocarbon layers up to 3 inches thick have been detected in 3 ground-water monitoring wells in this area. BTEX and PCBs also have been detected in the monitoring well located in this area. Lead, mercury, and arsenic also were detected in this well.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; all tanks were removed and the area currently is covered with grass.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (xylene, and unidentified hydrocarbons) and PCBs in the soil. Lead levels in the soil from this area were above the site and regional values.

Recommendations: Available sampling data indicate that the concentrations of VOCs (benzene), PCBs and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. PCB concentrations in the soil also have exceeded the proposed action levels. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

SWMU 21 **Former Underground Storage Tank Farm 4**

Conclusions: This area was located just off the northwest corner of building 30. The area had 8 USTs that contained various fuels and that ranged in capacity from 500 to 3,000 gallons. Observed releases to the ground water and soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that ground-water monitoring wells near the area detected the presence of vinyl chloride. Ground-water monitoring wells also detected the presence of lead, chromium, mercury, and arsenic at levels above the site average.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is no longer in operation. At least 6 of the 8 tanks have been removed.

On-site Soil: Engineering-Science reported that soil borings detected VOCs (TCE, TCA, DCE, BTEX, and unidentified hydrocarbons) and PCBsin the soil to the northwest of these tanks. Arsenic, chromium, lead, and mercury levels in the soil were above the site and regional values. EP toxicity testing from one soil sample yielded 18 ppm of leachable lead.

Recommendations: Available sampling data indicate that the concentrations of VOCs (vinyl chloride) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives. PRC also recommends a study to determine whether all tanks in this tank farm have been removed.

SWMU 22 **Scupper Area**

Conclusions: The area consists of an enclosed concrete pad measuring approximately 15 by 30 feet. The unit is used to store combustible liquids and waste oils in 55-gallon drums. The pad has grating in the front and a scupper at the back. There is no drain in the unit. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Low, the unit is on a concrete pad with a sump in the front covered by steel grating and a scupper in the back.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the wastes are in sealed 55-gallon drums

On-site Soil: In July 1990, Engineering-Science indicated the presence of TCE, DCE, and TPH in soil borings near the area (ES, 1990).

Recommendations: Available sampling data indicate that there are elevated concentrations of TPH in the soil near this unit. TPH concentrations have ranged from 26,000 mg/kg to 58 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the extent of the contamination. Ground-water sampling in this area also should be conducted.

SWMU 23 **Waste Otto Fuel Drum Storage Area**

Conclusions: This unit is located in building 56. The unit stores both virgin and spent Otto fuel and wastes associated with torpedo testing (that is, protective clothing). The wastes are stored in 55-gallon drums on a concrete floor. Storage capacity for the unit is approximately 200 drums. Typically, about 5 to 10 drums store waste, and the rest store virgin Otto fuel.

Ground Water: Low; the wastes are stored in sealed drums located indoors on a concrete floor. The building acts as secondary containment.

Surface Water: Low; the distance to surface water limits the potential of a release to this medium.

Air: The potential for a release to this medium is low. The wastes are contained in sealed drums. The building acts as secondary containment.

On-site Soil: Low; the unit is indoors on a concrete floor. The building acts as secondary containment.

Recommendations: PRC recommends no further action at this time.

SWMU 24 **Bay k-7 Sump**

Conclusions: This unit is located in the west-central portion of the facility, west of building 3. It consists of a storm drain sump. Sediment in the sump had a relatively high concentration of semivolatiles, ranging from 3,800 mg/kg to 58,000 mg/kg, and of PCBs, at 140 mg/kg. Water in the sump exhibited low levels of VOCs, PCBs, and pesticides. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Unknown; the area was not inspected during the VSI. Engineering-Science reported that no ground-water data about this area were obtained during the remedial investigation.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors. The building acts as secondary containment.

On-site Soil: Unknown; the area was not inspected during the VSI.

Recommendations: Available sampling data indicate that relatively high concentrations of semivolatiles, ranging from 3,800 mg/kg to 58,000 mg/kg and PCBs, at 140 mg/kg, were obtained from the sump. PRC recommends that soils and sediment be removed from the sump and disposed of according to applicable regulations. PRC also recommends additional sampling to determine whether there have been releases to the soil or ground water.

SWMU 25 **Building 24 and Associated Drain Lines**

Conclusions: This area is located in the north-central portion of the facility, near buildings 24, 41, 45, and 26. Past operations in building 24 included mercury cast testing. Two aboveground JP-5 fuel storage tanks currently are located near the exterior of building 24. Observed releases from an unknown source to the soil and groundwater near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that mercury at levels above the site average was detected in monitoring wells in this area. No VOCs, BTEX, or PCBs were detected in monitoring wells in the area.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; wastes are no longer generated at this unit.

On-site Soil: Engineering-Science reported that VOCs were detected in soil borings taken on the northeast side of building 24. Arsenic, cadmium, chromium, lead, and mercury also were detected at levels above the site average in the soil borings. Some lead and mercury soil samples were above the EP toxicity threshold levels (100 mg/kg and 4 mg/kg, respectively). However,EP toxicity testing on these samples yielded no detectable quantities of leachable lead or mercury. Samples from drain lines in building 24 detected lead, mercury, cadmium, and chromium at levels above the site average (ES, 1990).

Recommendations: Available sampling data indicate elevated concentrations of VOCs (TCE; cis-1,2-DCE; PCE; 1,1,2,2-PCA; TPH; and toluene) and metals (arsenic, cadmium, chromium, lead, and mercury) in the soil near this unit. TPH concentrations ranged from 780 mg/kg to 49 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the source and extent of the contamination.

AOC 1 **Railroad Spur/Lobby 3**

Conclusions: This AOC is located north of building 15 and northeast of buildings 19 and 24. Most of the area currently is grass-covered. In the 1950s, this area was used to make mercury castings or moldings (mer-cast). A 15,000-gallon aboveground storage tank was located south of building 19. The tank contained TCA used as a refrigerant in the mer-cast process. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (TCE, DCE, and vinyl chloride) were detected in ground-water monitoring wells in this area. Monitoring wells also detected the presence of lead, arsenic, chromium, and mercury.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; hazardous wastes no longer are managed in the area.

On-site Soil: Engineering-Science reported that soil borings also indicated the presence of VOCs (TCE, TCA, DCE, PCE, and BTEX) in the soil. Arsenic, chromium, mercury, and lead were detected in the soil at levels above the site average. EP toxicity testing on the soils indicated no

leachable amount of chromium, arsenic, or mercury. EP toxicity testing on one soil sample yielded 18 ppm of leachable lead (ES, 1990).

Recommendations: Available sampling data indicates that the concentrations of VOCs (TCE and vinyl chloride) and metals (arsenic, chromium, and lead) in the ground water near this unit have exceeded the action levels proposed by EPA that would trigger a corrective measure study (CMS). Arsenic and chromium concentrations in the soil also exceeded action levels. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

AOC 2 **Post 1**

Conclusions: The area formerly was a fire truck garage. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported TCA and 2-hexanone were detected in ground-water monitoring wells in this area.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; hazardous wastes no longer are managed in the area.

On-site Soil: Low; generates hazardous wastes no longer are managed or generated in the area.

Recommendations: Available sampling data indicate that 1,1,1-TCA and 2-hexanone were present in the ground water near this unit. PRC recommends that further sampling of the ground water be conducted to determine the extent of the contamination. Sampling of the soil should be conducted.

AOC 3 **Building 7 Tank Farm**

Conclusions: This area is located in the northwest corner of the facility, near the south-southwest corner of building 7. The area includes former and current underground fuel storage tanks. The area also has aboveground storage tanks in a fenced compound that is surrounded by a concrete dike. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Engineering-Science reported that VOCs (DCA, TCE, TCA, PCE, vinyl chloride, chloroform, dichlorobenzene, and BTEX compounds) were detected in monitoring wells in this area.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is underground.

On-site Soil: Engineering-Science reported that soil borings also detected the presence of VOCs (BTEX compounds, TCE, DCA, DCE, dichlorobenzene, and TPH) in the soil. Arsenic and mercury were detected at levels above the site average. Cyanide, at 0.39 mg/kg and 0.74 mg/kg, was also detected in two soil borings (ES, 1990).

Recommendations: Available sampling data indicate elevated concentrations of VOCs (chloroform; 1,1-DCE; cis-1,2-DCB; PCE; TCE; 1,1,1-TCA; and vinyl chloride) and metals (arsenic, cadmium, chromium, lead, and mercury) in the ground water near this unit. VOC concentrations ranged from 5 ppb to 320 ppb. Soils in this area also exhibited elevated levels of VOCs and metals. TPH concentrations in the soil ranged from 5.3 mg/kg to 290 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil and ground water sampling to determine the source and extent of the contamination.

AOC 4 **Forge Shop Addition**

Conclusions: This area is located in the west-central portion of the facility, along the perimeter of building 28. The area housed forging presses and hydraulic equipment. Observed releases from an unknown source to the soil and ground water near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Unknown; the area was not inspected during the VSI.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors. The building acts as secondary containment.

On-site Soil: Engineering-Science reported that VOCs (TCE and DCE) were present in soil borings in this area. Arsenic, cadmium, and lead were detected in the soil borings at levels above the site average. Several lead samples were above the EP toxicity threshold limit of 100 mg/kg. EP toxicity testing on the soil yielded leachable lead in quantities of 0.22 mg/kg and 0.16 mg/kg. Cyanide also was detected at levels ranging from 0.2 mg/kg to 0.9 mg/kg. A sewer sample obtained from the southern side of the building indicated chromium and lead at levels above the site averages (ES, 1990).

Recommendations: Available sampling data indicate elevated concentrations of VOCs (TCE; trans-1,2-DCE; and cis-1,2-DCE) and metals (arsenic, cadmium, and lead) in the soil near this unit. Lead concentrations ranged from 16 mg/kg to 6,400 mg/kg. Cadmium concentrations (61 mg/kg) exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

AOC 5 **Colwel Fill Area**

Conclusions: This unit is located east of East Road and building 33. Aerial photographs taken between 1953 and 1956 indicate that the area was used as a landfill or refuse dump. Observed releases from an unknown source to the soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Low; Engineering-Science reported that no significant levels of VOCs, semivolatiles, organic compounds, pesticides, PCBs, phenols, metals, or cyanide were detected in monitoring wells near the area.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is covered with grass and hazardous wastes no longer are managed there. The building acts as secondary containment.

On-site Soil: Engineering-Science reported that arsenic, chromium, lead, and mercury were detected in soil borings at levels above the site average. Chromium and mercury were above the EP toxicity threshold limit of 100 mg/kg and 4 mg/kg, respectively. Cyanide was detected at 4.65 mg/kg.

Recommendations: Available sampling data indicate elevated concentrations of metals (arsenic, chromium, lead, and mercury) in the soil near this unit. Lead concentrations ranged from 4.7 mg/kg to 89 mg/kg. Mercury concentrations (24 mg/kg) exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

AOC 6 **Colwel Complex**

Conclusions: This unit formerly was located in buildings 37, 38, and 40. TRW occupied the complex until 1986, when it was bought by Material Manufacturing Technology Center (MMTC). Building 38 housed a boiler, while buildings 37 and 40 housed offices, labs, and a pilot plant. Until the end of 1990, MMTC (OHD 153 916 978), which is the compressor division of Air Forging Textron, used the site as a research and development lab for manufacturing airfoil blades. Observed releases from an unknown source to the soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Low; Engineering-Science reported that there are no direct ground-water data for this area. The unit is indoors and wastes are no longer managed there.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is indoors and wastes are no longer managed there. The building acts as secondary containment.

On-site Soil: Engineering-Science reported that quantities of PCBs and xylene were detected in the soil borings near building 40. Soil borings also indicated the presence near buildings 38 and 40 of arsenic, lead, and chromium at levels above the site average. Mercury at levels above the site average was detected near building 40. Levels of chromium near buildings 38 and 40 were above the EP toxicity threshold level (ES, 1990).

Recommendations: Available sampling data indicate that detectable quantities of xylene and elevated concentrations of metals (arsenic, chromium, and lead) were detected in the soil near this unit. PCB concentrations in the soil near building 40 exceeded the action level proposed by EPA that would trigger a CMS. The exact source of the contamination is unknown. Therefore, PRC recommends a CMS be conducted to identify and evaluate potential remedial alternatives.

AOC 7 **Compressor Blowdown Area**

Conclusions: This area is located just outside building 22. Compressed air containing small amounts of oil was exhausted onto the soil in this area. In 1990, a containment box was installed to prevent contamination of the soil. Observed releases to the soil near this area have been reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Moderate; Engineering-Science reported that no ground water data for this area were available. Soil borings, however, indicate the presence of contamination.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the wastes are contained in a concrete containment box.

On-site Soil: Engineering-Science reported that DCE, PCE, TCE, and TPH were detected in soil borings taken in the area (ES, 1990).

Recommendations: Available sampling data indicate that elevated concentrations of PCE and TPH were detected in the soil near this unit. PRC recommends ground-water sampling and additional sampling of the soil be conducted in this area to determine the extent of the contamination.

AOC 8 **Former Underground Storage Tank Farm 5**

Conclusions: This area was located outside building 26, near 2-B dock. The area had four 2,000-gallon USTs, containing fuel and oil. Observed releases from an unknown source to the ground water and soil near this area have been

reported. The releases and the probability of potential releases to environmental media are summarized below.

Ground Water: Moderate; Engineering-Science reported that no ground water data for this area were available. Soil borings, however, indicate the presence of contamination.

Surface Water: Low; the distance to the nearest surface water limits the potential of a release to this medium.

Air: Low; the unit is no longer in operation. All tanks have been removed.

On-site Soil: Engineering-Science reported the presence of TCE, DCE, and TPH in soil borings taken from this area. TPH concentrations ranged from 58 mg/kg to 26,000 mg/kg (ES, 1990).

Recommendations: Available sampling data indicate elevated concentrations of VOCs (TCE; 1,2-DCE; and TPH) in the soil near this unit. TPH concentrations have ranged from 58 mg/kg to 26,000 mg/kg. The exact source of the contamination is unknown. PRC recommends additional soil sampling to determine the extent of the contamination. Ground-water sampling also should be conducted in this area.

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ATTACHMENT A

EPA PRELIMINARY ASSESSMENT FORM 2070-12

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	OHD157367301

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER
Argo-Tech Corporation	23555 Euclid Avenue

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Cleveland	OH	44117	Cuyahoga	035	19

09 COORDINATES: LATITUDE	LONGITUDE
41°34'40"N	81°31'18"W

10 DIRECTIONS TO SITE (Starting from nearest public road)

I90 east to 222nd St. Go west on 222nd St. Take right on Euclid Avenue. Facility is on the left.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Argo-Tech Corporation	23555 Euclid Avenue

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Cleveland	OH	44117	(216) 692-5313

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency Name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER _____ (Specify) ☐ G. UNKNOWN

14. OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3010 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 8/28/91 ☐ NO

BY (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)

CONTRACTOR NAME(S): PRC Environmental Management, Inc.

02 SITE STATUS (Check one)

☒ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION

1941 (BEGINNING YEAR) Present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Substances found on-site include solvents, electroplating sludge, waste paint, Otto fuel, aviation fuel, flammable liquids, oxidizing material, chlorinated oil.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

The potential hazard to environment and/or population is low to moderate. Several hazardous substances (VOCs, PCBs, and metals) have been detected in the ground water and soil. The nearest well is located up-gradient of the facility.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents.)

☐ A. HIGH (Inspection required promptly) ☒ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time-available basis) ☐ D. NONE (No further action needed; complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Kevin Pierard	U.S. EPA	(312) 886-4448

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Tom Sinski		PRC EMI	(703) 556-2811	12/10/91 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
OH	OHD157367301

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☒ A. SOLID
- ☐ B. POWDER, FINES
- ☒ C. SLUDGE
- ☐ D. OTHER _____ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE *(Measures of waste quantities must be independent)*

TON 710

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS *(Check all that apply)*

- ☒ A. TOXIC
- ☒ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. INFLAMMABLE
- ☒ H. IGNITABLE
- ☒ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	654,960	pounds	toxic
OLW	OILY WASTE	16,275	pounds	toxic
SOL	SOLVENTS	39,189	pounds	toxic, highly volatile, ignitable
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	710,369	pounds	toxic, corrosive, volatile, ignitable
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES *(See Appendix for most frequently cited CAS Numbers)*

CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOL	Freon	0076-13-1	drum		
SOL	Perchloroethane	127-18-4	drum		
SOL	1,1,1-trichloroethane	25323-89-1	drum		
SOL	Xylene	1330-2-7	drum		
SOL	Mek/dioxane Mix	0078-83-3 0123-91-1	drum		

V. FEEDSTOCKS *(See Appendix for CAS Numbers)*

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION *(Cite specific references: e.g., state files, sample analysis, reports)*

Preliminary review of U.S. EPA and Ohio EPA files. Visual site inspection, August 28, 1991.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE: OH	02 SITE NUMBER: OHD157167301

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☒ OBSERVED (DATE: 4/89) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

Engineering-Science reported ground water contaminated with VOCs, PCBs, and metals was detected in several monitoring wells located on the site.

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☒ OBSERVED (DATE: 10/31/85) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

TRW (currently Argo-Tech Corp.) reported a release of torpedo fuel (Otto fuel) to a wetland area on the site. The area was remediated and RCRA closed in 1990.

01 ☒ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0-50 04 NARRATIVE DESCRIPTION

Wastes generated at facility include volatile solvents. Facility workers would be at the highest risk of exposure.

01 ☒ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

The facility handles many volatile and ignitable hazardous wastes.

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

Access to the site is restricted.

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: 10/85-4/89) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: 200-300 (Acres) 04 NARRATIVE DESCRIPTION

Three releases to soil of hazardous constituents were reported in 1985, 1987, and 1988. In addition, soil borings taken by Engineering-Science in 1988 and 1989 indicate soil on much of the facility's grounds is contaminated with VOCs, PCBs, total petrohydrocarbon, and metals.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

The area is supplied by the Cleveland municipal water supply.

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0-50 04 NARRATIVE DESCRIPTION

There are many hazardous constituents at the facility that a worker could be exposed to or cause injury if not managed properly.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

None.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
OH	OHD157367301

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ■ J. DAMAGE TO FLORA — 02 □ OBSERVED (DATE:_____) — ■ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

Several areas at the facility have soil and ground water that is contaminated. The contamination could cause damage to nearby flora.

01 □ K. DAMAGE TO FAUNA — 02 □ OBSERVED (DATE:_____) — □ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

None.

01 ■ L. CONTAMINATION OF FOOD CHAIN — 02 □ OBSERVED (DATE:_____) — ■ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

Contamination of the food chain is possible since soil and ground water at several locations on the site are contaminated.

01 □ M. UNSTABLE CONTAINMENT OF WASTES — 02 □ OBSERVED (DATE:_____) — □ POTENTIAL — □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

None.

01 ■ N. DAMAGE TO OFF-SITE PROPERTY — 02 □ OBSERVED (DATE:_____) — ■ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

Migration of contaminated ground water could damage off-site property and property values.

01 ■ O. CONTAMINATION OF SEWERS, DRAINS, WWTPS — 02 □ OBSERVED (DATE:_____) — ■ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

The Textron Kolene wastewater treatment system discharges approximately 15,000 to 20,000 gallons per day of treated wastewater to the Euclid sanitary sewer system.

01 □ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 □ OBSERVED (DATE:_____) — □ POTENTIAL — □ ALLEGED
04 NARRATIVE DESCRIPTION

None.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 0-50 (site workers)

IV. COMMENTS

Site is contaminated in several areas. Suggest a CMS be conducted for this site.

V. SOURCES OF INFORMATION ***(Cite specific references; e.g., state files, sample analysis, reports)***

Preliminary review of U.S. EPA and Ohio EPA files. Visual site inspection, August 28, 1991. Engineering-Science remedial investigation report submitted in 1990.

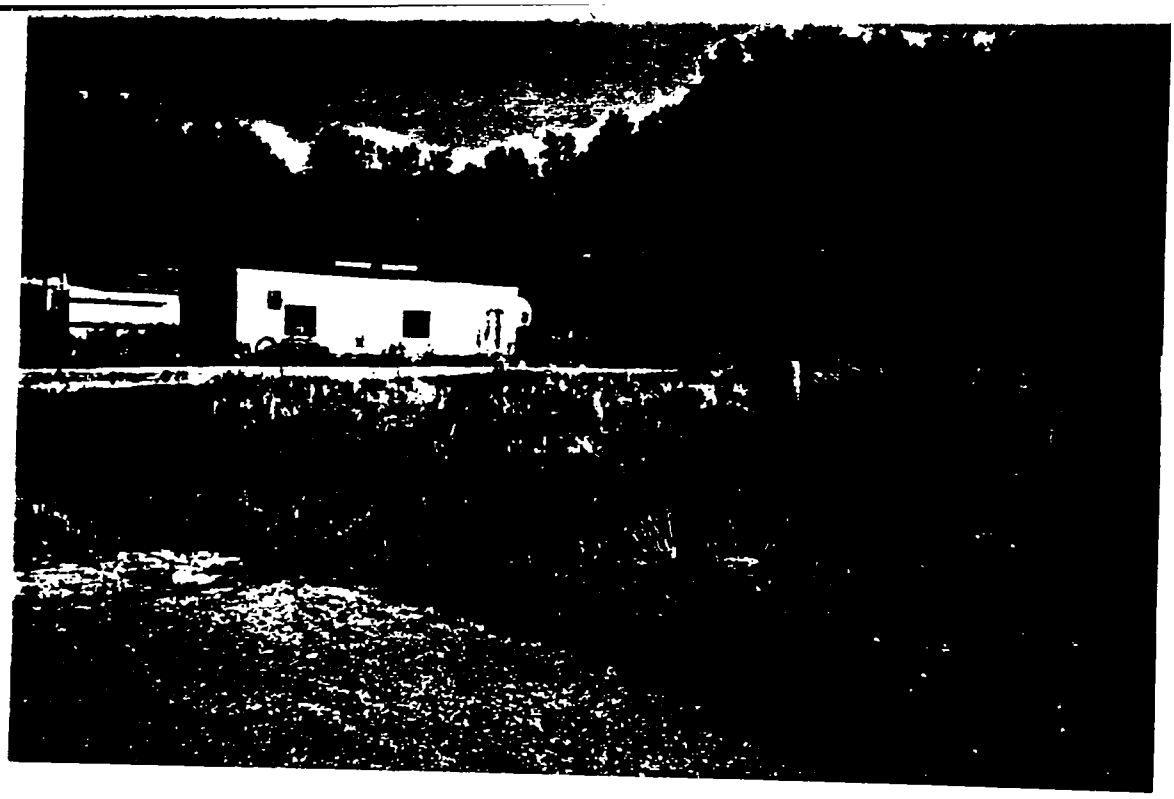
ATTACHMENT B

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

VISUAL SITE INSPECTION SUMMARY

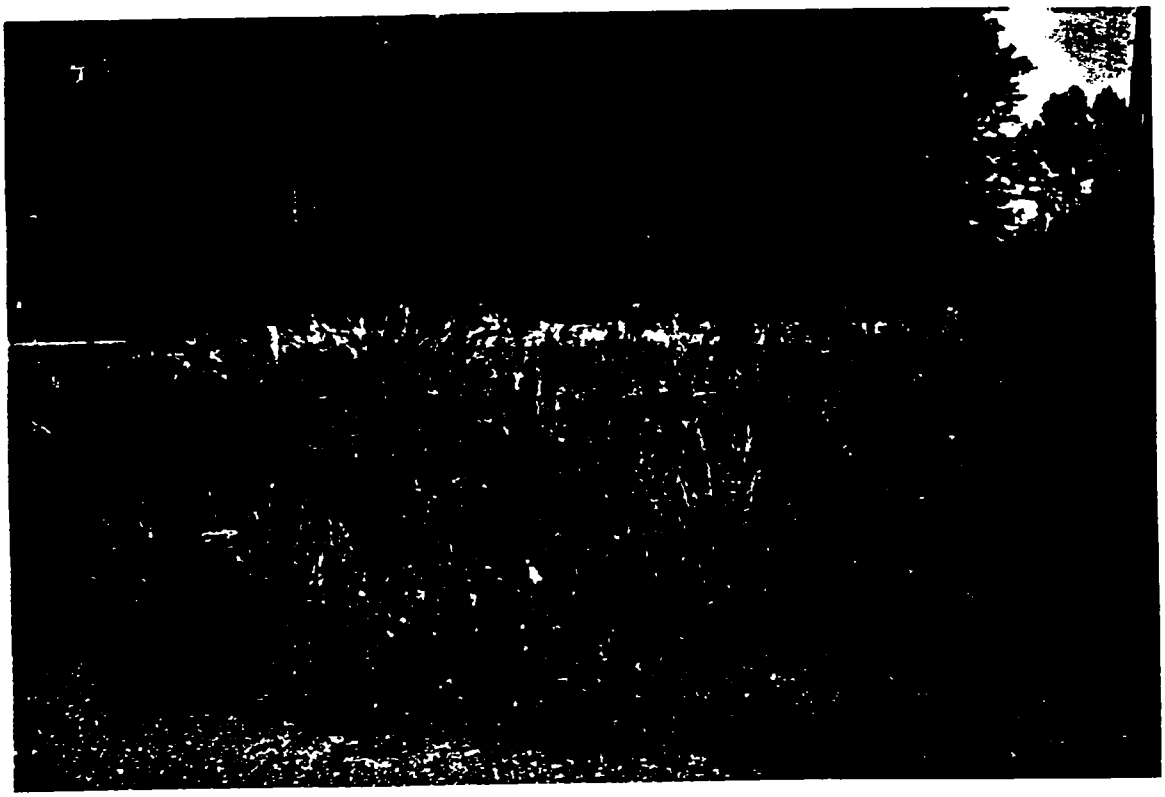
Argo-Tech Corporation
(Formerly TRW, Inc.)
23555 Euclid Avenue
Cleveland, Ohio 44117
OHD 004 179 453

Date:	August 28, 1991
Facility Representatives:	
Inspection Team:	Tom Sinski, PRC Environmental Management, Inc., (703) 556-2811 Sharon McLellan, PRC Environmental Management, Inc., (703) 883-8821
Photographer:	Sharon McLellan
Weather Conditions:	Warm, 80-85°F, sunny
Summary of Activities:	The visual site inspection began at 9:00 a.m. at the Argo-Tech facility in Euclid, Ohio. Tom Sinski and Sharon McLellan reviewed the purpose of the visit and the overall U.S. EPA Region 5 Environmental Priorities Initiative program to the Argo-Tech and TRW representatives. Argo-Tech and TRW representatives then gave an overview of the history of the facility and the operations taking place at the plant. Waste generation, storage, and disposal were discussed at length. Photographs taken during the VSI are presented in the following pages. A tour of the facility began at 11:27 a.m.. The PRC team inspected the SWMUs and AOCs at the facility. At approximately 1:57 p.m., the PRC, Argo-Tech, and TRW representatives returned to the conference room for debriefing. After a brief exit interview, the PRC team left the facility at 2:10 p.m.



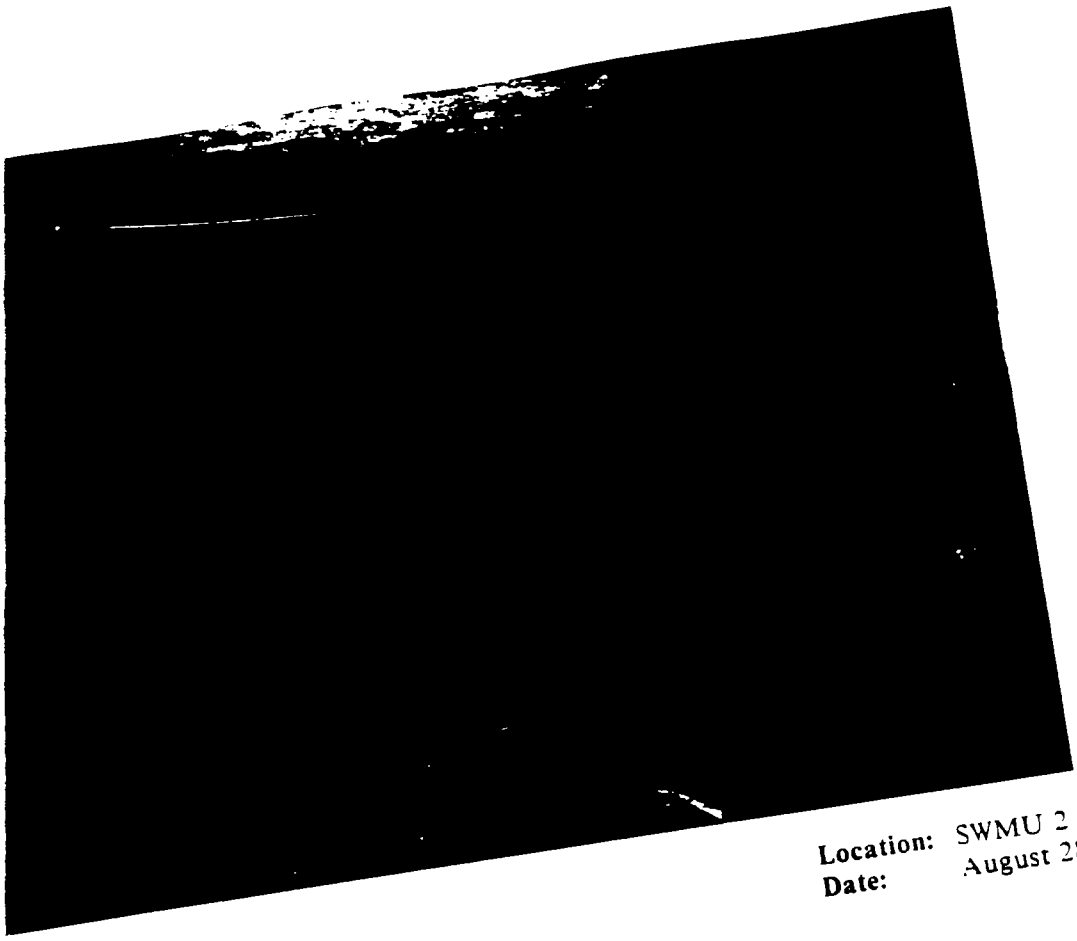
Photograph No. 1
Orientation: North
Description: Former building 49 area now occupied by grass field

Location: SWMU 1
Date: August 28, 1991



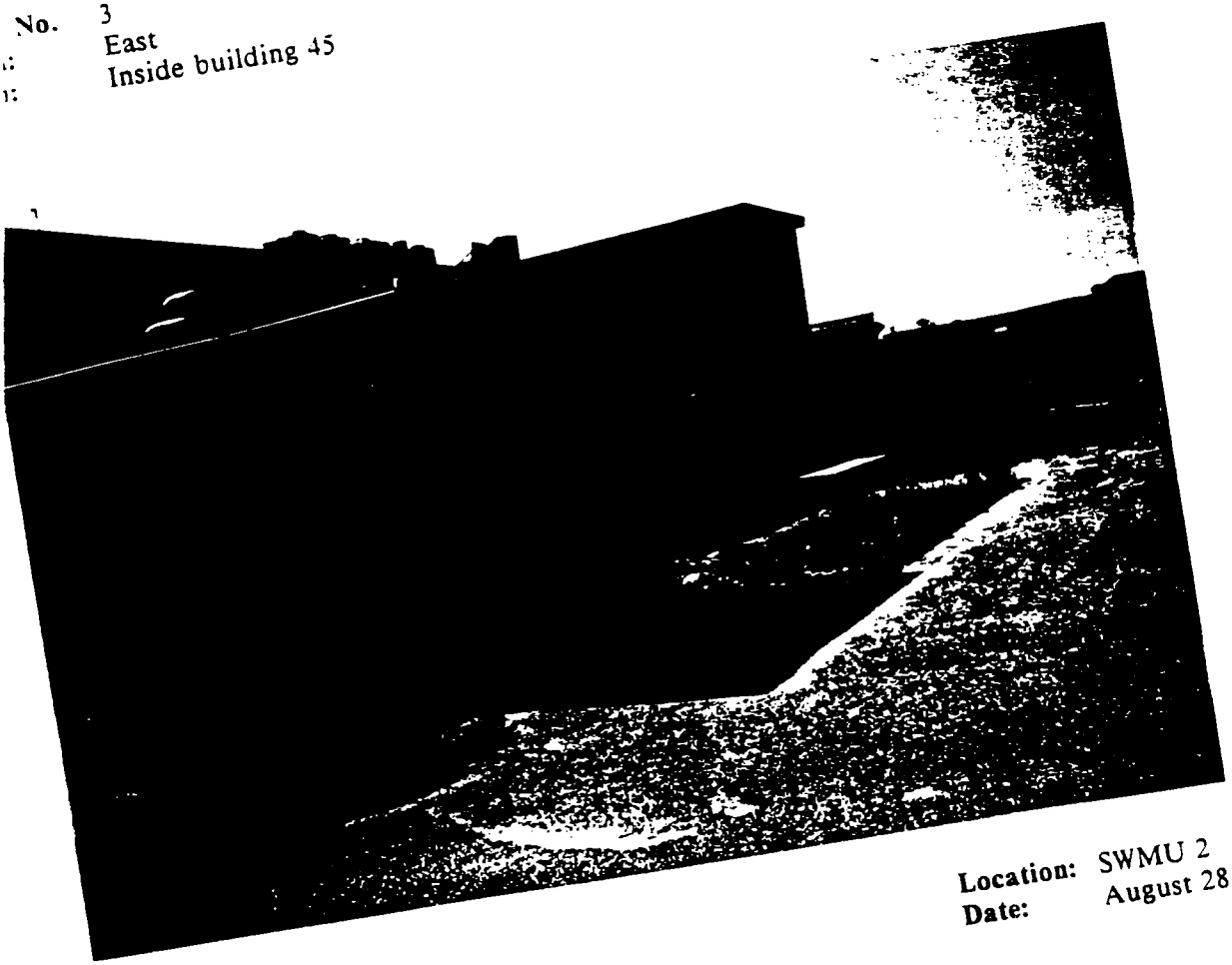
Photograph No. 2
Orientation: East
Description: Former UST area now covered with grass

Location: SWMU 1
Date: August 28, 1991



Location: SWMU 2
Date: August 28, 1991

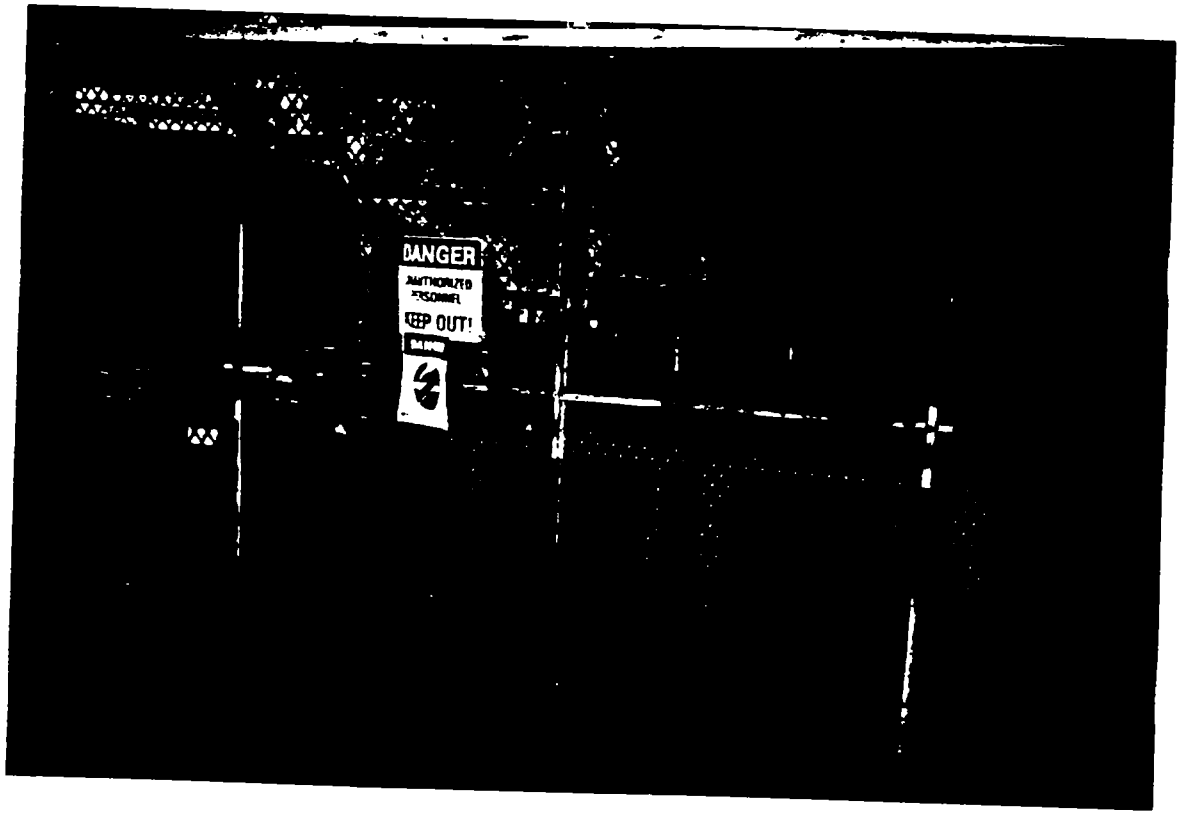
No. 3
East
Inside building 45



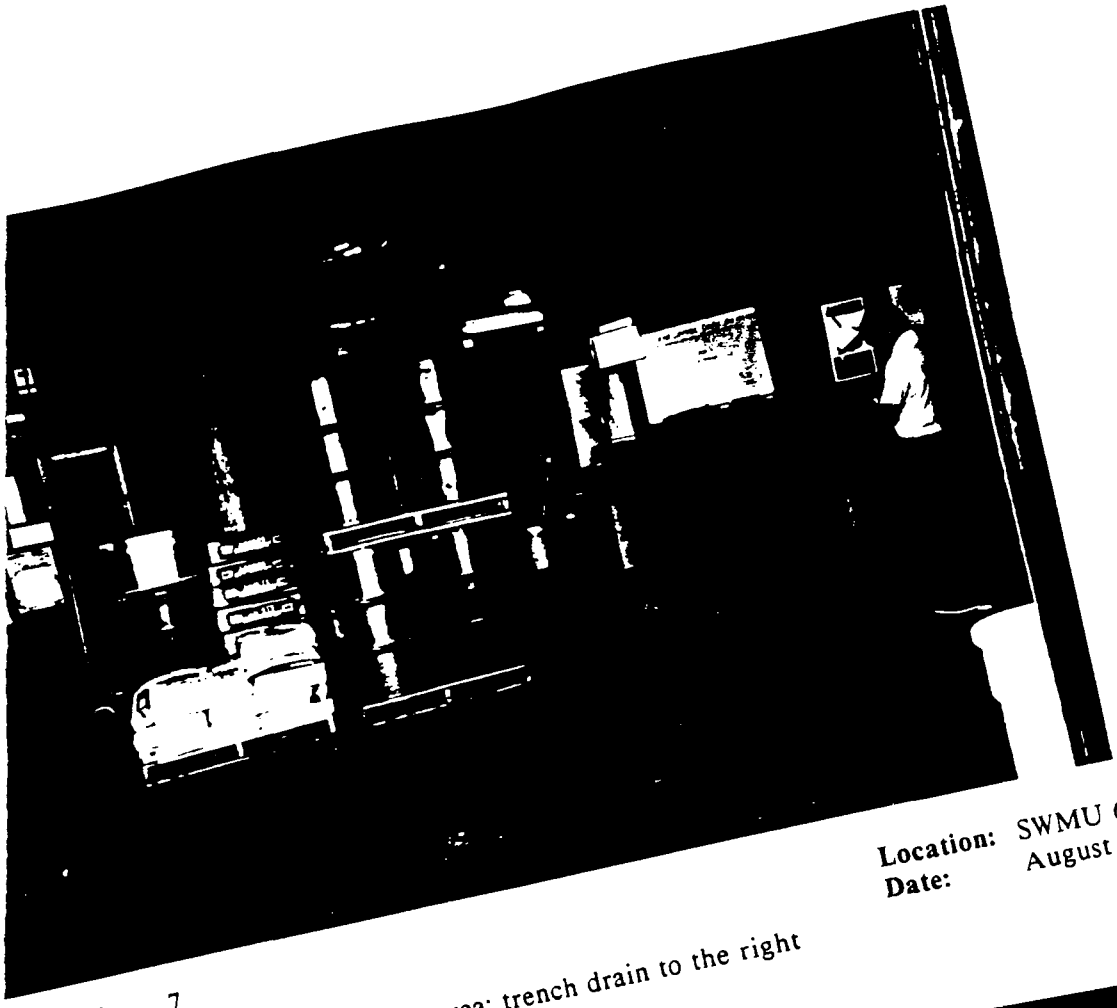
Location: SWMU 2
Date: August 28, 1991

Photograph No. 4
Orientation: West
Description: Outside building 45

Photograph No. 5 **Location:** SWMU 4
Orientation: North **Date:** August 28, 1991
Description: Satellite drums and temporary storage tank surrounded by concrete containment wall

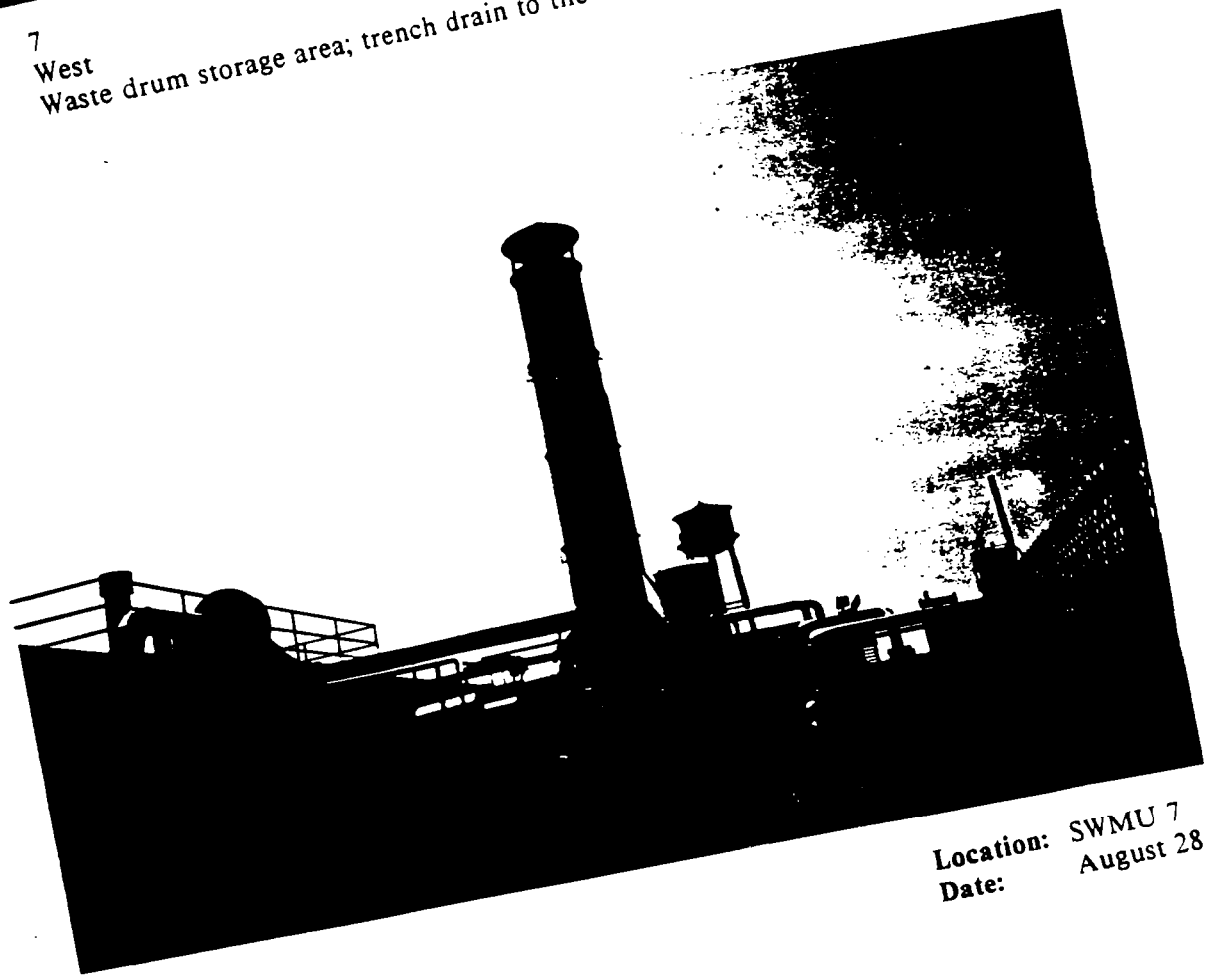


Photograph No. 6 **Location:** SWMU 5
Orientation: South **Date:** August 28, 1991
Description: Airfoil Forging Textron hazardous waste drum storage area



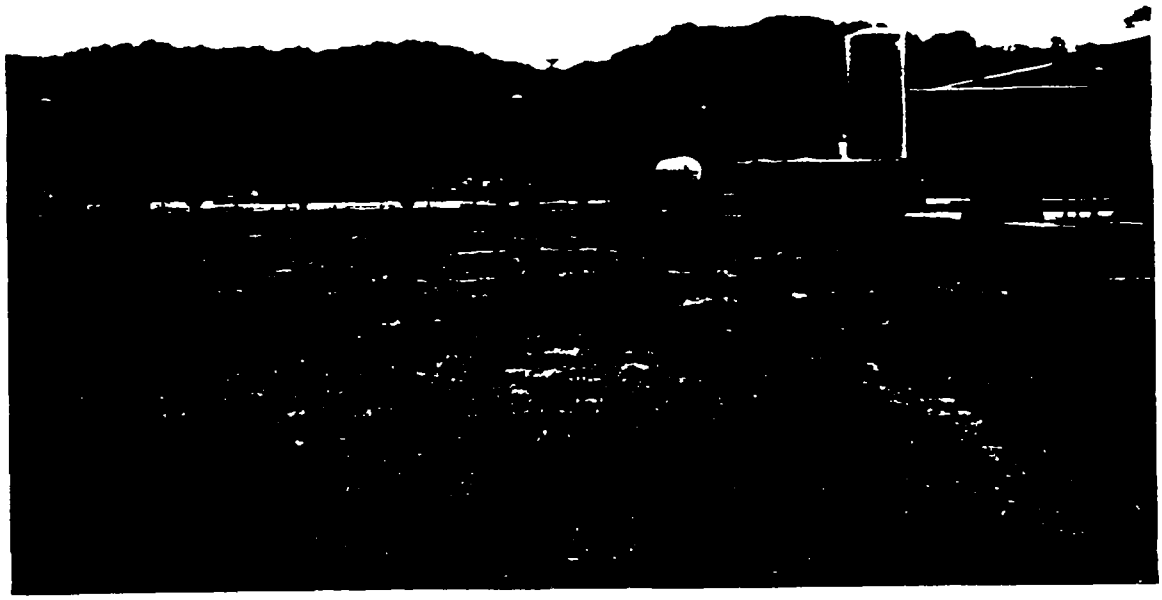
Location: SWMU 6
Date: August 28, 1991

graph No. 7
ıtation: West
ription: Waste drum storage area; trench drain to the right



Location: SWMU 7
Date: August 28, 1991

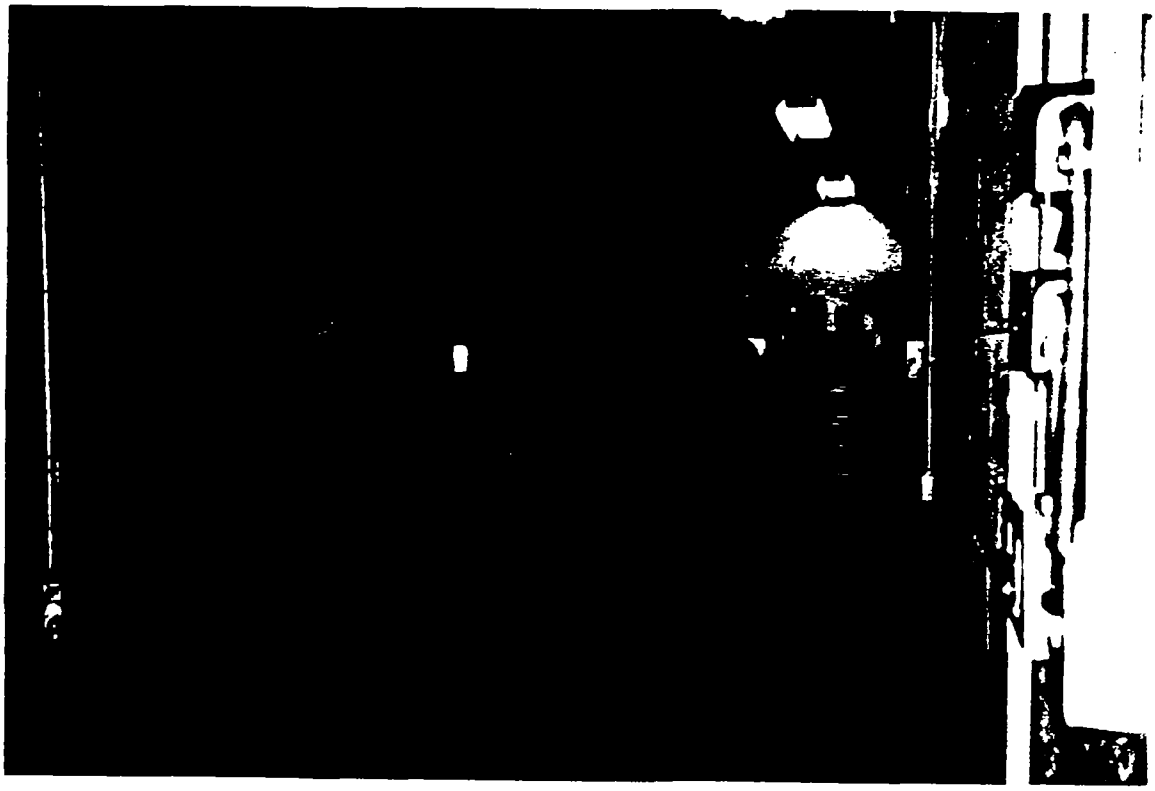
Photograph No. 8
Orientation: West
Cyanide afterburner



Photograph No. 9 **Location:** SWMU 8
Orientation: South **Date:** August 28, 1991
Description: Former concrete block filter area located to the right in the photograph

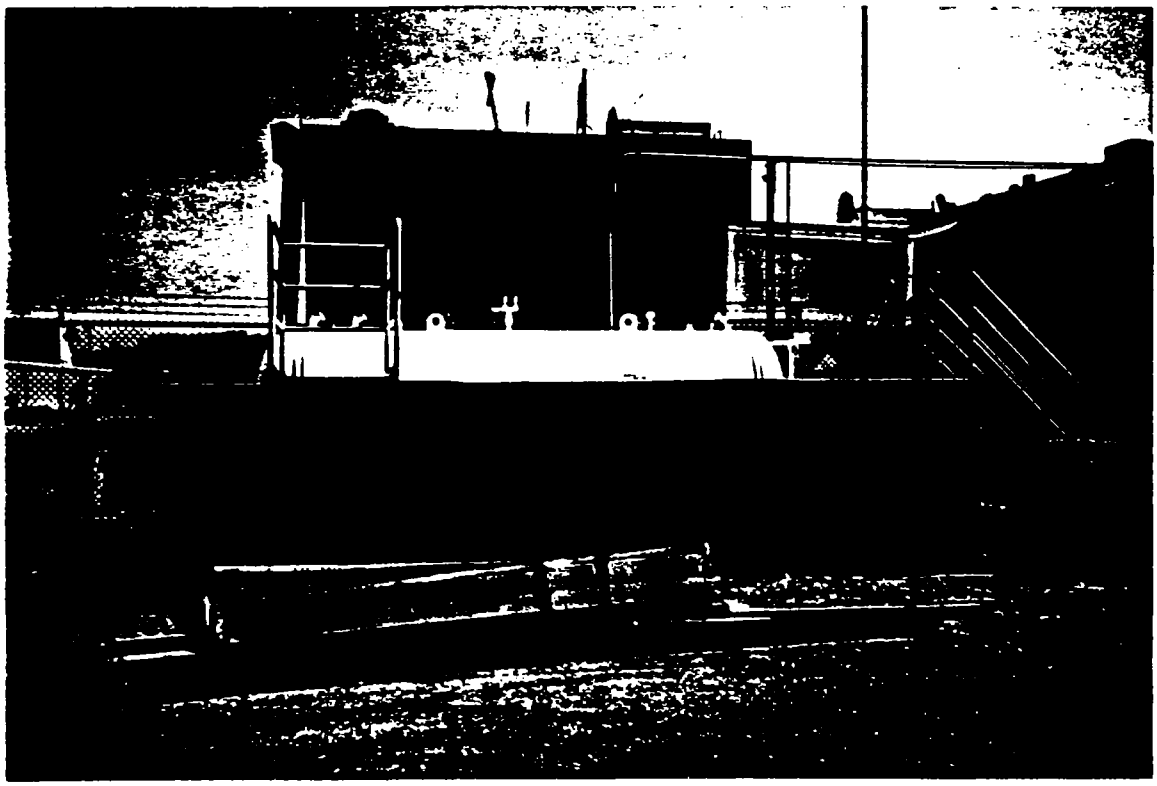
Photograph No. 10 **Location:** SWMU 9
Orientation: North **Date:** August 28, 1991
Description: Chip dock area; oil on surface

Photograph No. 11 **Location:** SWMU 9
Orientation: South **Date:** August 28, 1991
Description: Chip dock area; trench drain in front of dumpster



Photograph No. 12 **Location:** SWMU 13
Orientation: North **Date:** August 28, 1991
Description: Bulk waste Otto fuel storage

Photograph No. 13 **Location:** SWMU 17
Orientation: Southeast **Date:** August 28, 1991
Description: JP-4 underground storage tank farm; former UST farms (SWMUs 18-21) also located in this area



Photograph No. 14 **Location:** SWMU 25
Orientation: South **Date:** August 28, 1991
Description: Area behind building 24

ATTACHMENT C

VISUAL SITE INSPECTION FIELD NOTES

(10) TRW VSI Sharon McClellan

9:00 A.M 8/29/81 Arrived at work
Sharon McClellan
Met with Bruce Richardson
(Argo Tech) and Andy Reuter (TRW)
at 9:18 A.M..
TRW has no manufacturing
facilities on-site since 1986.
Only have a coal combustion
unit. Also met by Mark Ross
(Argo. env. supervisor).
ID # on letter is not
Argo Tech's.
TRW has corresponded with
Lisa Perrard on closure
matters.
Last RCRA audit 1988 Paul
Anderson (OEPA).

(11)

Purchased by Argo Tech
10/86.
Submitted closure plan
11/87.
12/88 Approved closure plan
OEPA.
8/89 OEPA/USEPA approved closure plan.
9/5/89 Paul Anderson performed
RCRA inspection
Closure completed 1/3/90.
Began charge from TSD
to large quantity generator.
OEPA approved closure on
9/17/90 OEPA approved
change from TSD to large
quantity generator & approved
the closure.
9/6/90 Closure inspection by
Paul Anderson (OEPA).

(12) 1941 Agricultural Camp TRW

Started bldg in 1941.
Govt bldg. Started to make airplane valves.
All bldg's completed by 1967. Not many changes since then.
Used to be TRW's Corporate headquarters.
Manufactured mainly aircraft parts. Other operations heat treating, plating, torpedo testing, metal finishing.
Argo Tech originally made aircraft pumps. Leptron made Compressor Components.
Since 1987 several new companies have become tenants.
Had located here until sale of property.

TRW (13)

Total area 194 acres.
1.7 million sq. ft under roof.
Now down to 154 acres.
Currently makes aircraft fuel pumps (Argo) compressor blades for jets (Leptron) PTI torpedo and missile testing manufacturing.

Upon closure Argo took moved storage to WWTP.
Bldg 45 not used since closure.

Leptron stores HW at 2B dock.
WWTP has NPDES permit outfall to storm sewer.
Manufacturing process discharge to sanitary sewer.
002 + 001 outfalls only permitted outfalls.

(14)

Sanitary sewer permit TM from Euclid WWTP.

Two outfalls (S1 + S2).

On Cleveland's municipal water. Recirculation pump station.

ES. Reports no municipal wells within 3 miles.

Bounded on east by RR corridor, electric, Residences just N of the southernmost of the facility.

Wetland to the east of Bldg 19. Unknown if it is regulated by Corps of Eng.

Storm sewer discharges to Lake Erie.

IGC bought plating area separate owned all equipment and discharged to Cryo's WWTP. IGC bought part of plating area and added to enlarged Plating area now encompass 5 bay quad.

Bay 6 4x6 4

Waste generated: Cryo stock mostly machining waste. Metal chips, turnings (recycled).

Solvents (32 vapor degreasers in use) used for cleaning. Other waste acids from machining. Paint coatings

Hydrocarbon kerosene fuel. Aviation fuels (JP4). Some UST for engine and motor fuel.

1006 pollution calls made from WWTP.

Surface mostly storm sewers. Waters include coatings (leaded) machine oil - goes to Cryo stock

(15)

(16) for bulk shipment. Tank
Toluene (methanol NaOH) to
remove debris off tanks.
septum cutting oil to recycled
oceder waste oil stored
& shipped by Argo-Tech.
Hazardous wastes handled
same as Argo-Tech
Hazardous wastes handled
Separately.
On original part A. area
near Bldg 31 had 1 UST
(separator 10,000 gal tank) removed
from part because of
less than 90 day storage.
Waste oil ava. stored as a
precautions. Hauled by Argo-Tech
for Hazardous waste.

Bldg 45 asbestos Tank (17)
removed after the floor
was partially removed.
Glenn D ES

Releases - 4 responses to
the national release center.
2/11/82 Transformer incident
notified NRC + OEPA Westlake
Don Pepke + Ken Schultz. Transformer
inspection pilots blew off.
Cleaned up the substation.
1985 50 60 Hz transformers removed
and 430 PCB capacitors up until
1987.
Bldg 49 10/31/85 notified NRC.
and OEPA for an oil sheen
on the creek.
7/1/87 notified NRC of an
historical spill of JP-4 for
the general area.

(18) Questionnaire from Ken Schultz. OEPA → OEPA

11/4/87 Report to NRC of a general entire site spill of sediments, fuels, PCB's. ES prepared a RI/FS on 7/90 of entire site.

Remediation of area still Containing. Area near bldg 32 + 31 JP-4 in soil. Also PCB's in soil from a heat exchanger.

Also in the plating area (Bldg 4) deep soil borings to look for contamination. E-S has done all remediation studies since 1987.

Bldg 31. No evidence of migration to swale to the east. Had a copy of E-S

Remedial investigation Study TRW (19)

N.W. of tower due north no migration off site has been found at down gradient wells.

Water table appears to be highly variable. Strata deposits also variable TRW now has Dick Stritchey working on remediation.

3 main areas of remediation
① JP-4 UST bldg 32 31
② Plating Area Bldg (4)
③ Ship Dock area has UST. Bldg (35)

Bldg 19. Mercury Molding. 1950's. After 1960's changed monitoring Mercury much more closely monitored.

(20) Currently characterizing site for remediation. TMS

Tour commenced at 11:27
Bldg 49 area. Fenced area
3 med bldg's 2 small
Bldg's.
Bldg 49 demolished, open
grassy field.
Separator tank and 3
acbm tanks removed.
H.W monitoring well just
to west of bldg 49.

Bldg 45, previously used
as a refb. range.
Used for H.W. Sludge
(Chromium sludge). Material
stored for a long time.
Now used by Argo Tech.

TMS (21)

storm water drain.
North side Floor appears clean and
resurfaced.
Trench at base of ~~wall~~ door
filled in.
Contained mostly drums
of plating sludges which
were removed under closure
plan.
South side of Bldg 45:
Same as north side. Trench
in front of door has
been filled. Only results
seen no cracks completely
through the base. Room
smelled like mothballs

Outside 2B-Dock just west of 1 200 gal. acid storage tank 1 200 gal caustic tank 1 55 gal sat. drum. Pump to tanks. Truck ships to WWTP. Elevated from Al. decking

Dock - 2B TRU area SE corner occupied by milling machine. Concrete floor some cracks.

C-Yard area to west used by Lockheed is fenced and contains drums of waste Halon and landed coating. Flooring is brick.

C14 Plating area. Bulk plating tanks for copper plating, anodizing Tanks are raised and placed on poured concrete dished areas with leak detectors. All process wastes goes to waste treatment plant.

Cyanide detection unit.

C15 Wastewater treatment system and H.W storage. Floor is sloped. Grid has longitudinal grated floor drains which drain to a sump. Border to outside is not diked. H.W. Drums, solvents, still bottoms, methanol.

(24) 8 drums on ~~the~~ palettes TMS
(4 per). Palettes on ~~top of~~ those drums. 5 drums on ~~top of those~~ palettes.

WWTP effluent 50,000 gpd
150,000 gpd. Max capacity
300,000 gpd. Treats plating
operation, metal finishing
etching, acid washes all
process water.
Computer controlled.
pH set point from clearwell
8.5.
Separate tanks for treating
Chrome, cyanide, pH adjustment.
Outfall monitored for pH,
flow, cyanide (daily), metals (daily).
Computer records all
info.

TMS (25)

Clarifier blown down once
a week.
Acid/Caustic waste go to pH
adjustment tanks.

TP-1 tank farm
gravel bed. 2 virgin
tanks (10,000 gal) 1 dump
tank 10,000 gal) 1 oil/water
separator (10,000 gal) tank
truck empties dump tank
once/month.
valves to dump tank
lines underground.
Clean fuel tanks to the
east of tank farm.
~30 drums (55 gal)

26 Area Bldg 33A TMC

Cyanide afterburning tower generated from torpedo test section.
~~Torpedo test~~
Granted air registration ~~status~~. Also tests liquid waste torpedo fuel. Waste liquid bldg 30.
3 (5000 gal) ~~tank~~ hold waste oil & fuel.
Shipped back to navy not ~~treated~~ dry wt.
Concrete floor with drains leading back into ~~bay~~

Sewer outside of ~~dock~~ TP-4 farm goes to storm sewer

TMC (27)

Shipped Dock Crew outside. Dumpster of scrap mild steel, cuttings asphalt floor. very oily All metals are recycled Empty drums on south end of dock.
Drain from dock goes to oil water separator

Tour Concluded at 1:57 p.m.
Debriefing held 4:10 p.m.

8/29/91

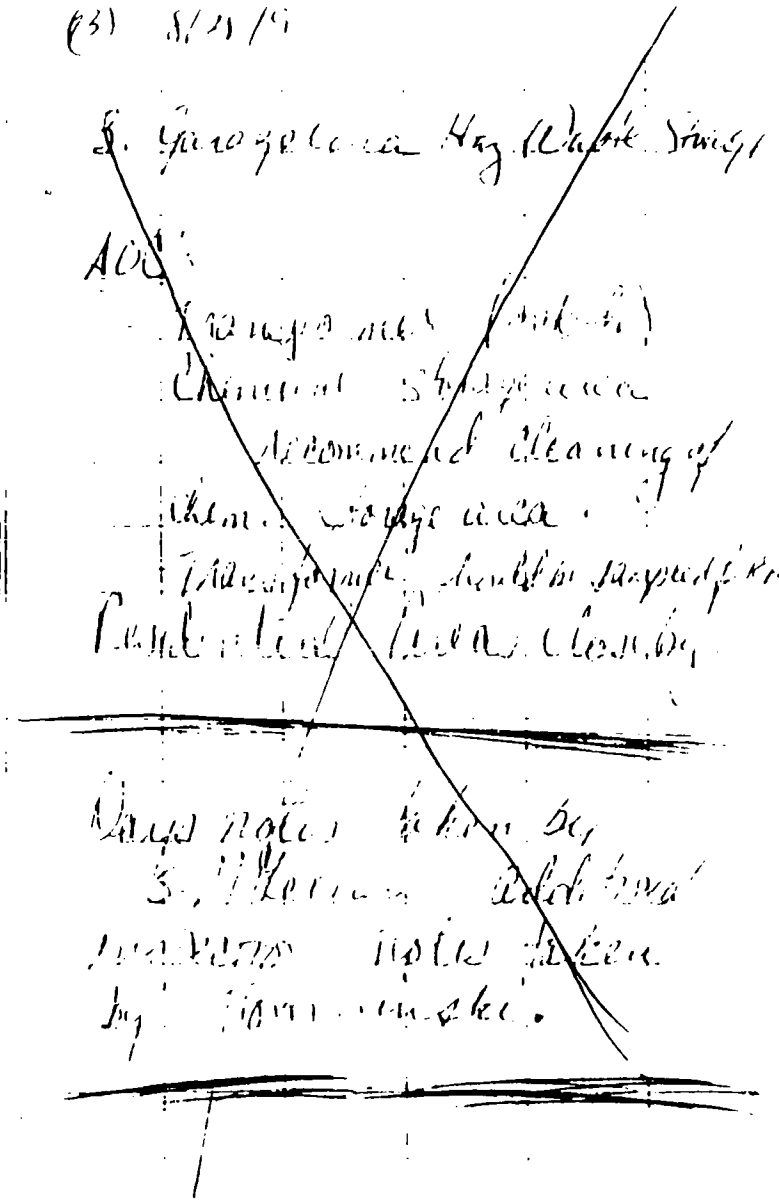
Thursday Aug. 29, 1991

PA/USI (c) TRW (Argo/Tech)
33555 Euclid Ave.
Cleveland (Euclid), OHIO

Weather Overcast, 70-80°F,
winds SW 5-15 mph.

ME & M Personnel Conducting USI:
S.A McLellan
J Senske

Other Personnel Assisting:
Bruce Richardson - Argo Tech
Andy Reseter TRW
Mark Hood Argo Tech.



[illegible] - Closure plan submitted

[illegible] - Closure plan accepted by OEPA

[illegible] - Letter from OEPA stating need to amend closure plan

8/8/90 - Letter from OEPA accepting closure plan

[illegible] - Site Plan

9/5/90 - Anderson (OEPA) exit interview

9/10 - Letter submitted to OEPA

[illegible] - Letter from Coordinator re: [illegible] inadequate [illegible] from 1986.

[illegible] - Letter from Coordinator stating [illegible]

9/13/90 - OEPA changed status from TSD to generator (Paul Anderson) from Logan (OEPA).

9/19 - Anderson (Williams) (OEPA) closure inspection

Nov. 90 - Rpt. on PA. for site (OEPA).

History of facility:

- provided from information

Prior to 1941 - Agricultural

1941 - started construction

Prior values - continued construction

Lithium radio handle
Fairly by RR

* Chlorination facility
in bldg # (DES on
sketch)

Texaco Again started
at Rock Quarry

Present
only flows into
storm sewer

Outfall to - NPDES permit
limited into Nottingham
within 1 release to 001 at the
rate of 2.0 MGD.

* City of Euclid sanitary
sewer system
Storm sewer system.

* City of Cleveland water system.
(Nottingham Station).

+ Rail Road on NW of property
is Norfolk & western.

* No wells within a 5 mi
radius (per GS report).
all supplied by Cleveland.

Lincoln Electric - NW

Spills

Rapid Machining oil
- Stored in Diesel
Dike area

- Will supply the Cummins generator repair for 1990, - Received.

Spills (Natural Responses)
- ~~Bldg. 49~~ (Shop)

1. Feb. 11, 1982 regarding transformer incident related OSCB, NRC & DPA - Transformer nameplate blew off transformer (Brand).

1984-1985 - all PCB containing transformers removed from facility (+ PCB Containing Capacitors).

2. Bldg. 49 Investigation 10/31/85. - NRC notified - OEPA notified.
- Oil sheen on swale Coming from Bldg. 49 (Control fuel - UPOES) area.
- See #5 report on study.

3. July 1, 1987 - NRC notified regarding JP-4 material in tank farm area.
Historical spill from leaking tank found during the investigation.

Bldg #41 - Mercury Contamination due to [illegible] program in the 1970's.

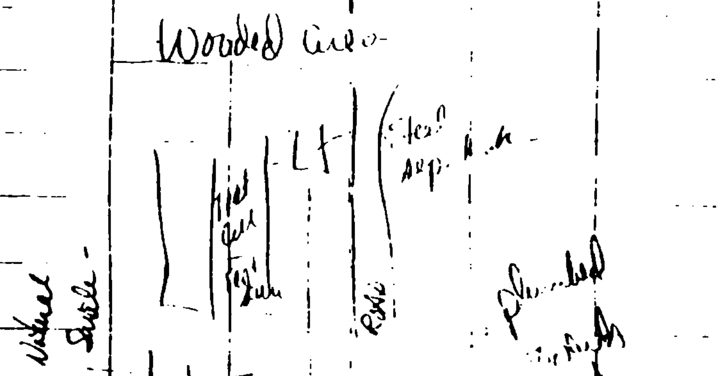
* All areas of contamination have primarily been identified to date. must see E.S. report.

No offsite migration of GW contaminants - GW flows S to North.

11:30 Start site walkthrough

photo # 8 + 9.
Bldg 48 area (area of Haz waste storage)
Presently Bldg gone + grass covered. - All power service shut off. All tanks removed area secured w/ fence + gate. Looking North from gate towards Bldg 4[illegible] + Wooded area

(Former sketch of area:)



2- Block area
- No photo due to
different operators Painting
Non leg Grind
Concrete floor, 4 typical
machining operations
in this area now,

No Quick change fixture
just sentiment of TRICO
plans in the work storage
Locked Loading area front
of Locked. Grinder system

Ensemble, Pi Bs, Cambre
Un (Sol/Solid), 2 L.

Photo #14 Air foil forging
Aluminum - AA-2
area Looking S.W.

Plating area Cyanide tech (TC)
Cuivre Cyanide Nickel w/
Rack detection system

3- Scrubbers: in plating
area one Rack Water
from scrubber is put into
Waste Management treatment
Cyanide
Cr + Acid Alkali

NB! Cyanide detection

Effluent discharge
[illegible] mg/l.
[illegible] Kerosene).
[illegible] [illegible].

[illegible] and [illegible]
[illegible] handle [illegible]
[illegible] of [illegible]
[illegible].

- Fauvel Bastogne W.W.T.
- 1 Compressed system
[illegible] normally 1 [illegible]
[illegible] 1 pump & motor
[illegible] system malfunction.
- Double staging system for
W.W.T.

Staging - monitoring
pH, flowmeter - checked
monitoring of 10 G
metal Gate.
Classified Shutdown
once per month.

* Last year Bldg. 71 Effluent
Handle [illegible] Kerosene
tank - used oil/per week
to waste water flow from
Hydro. Tank used
by staking Petroleum in
1986 by TEW.

* UST inc. - 1 P4 tank
- 3 10,000 [illegible] waste [illegible]
1 - 20,000 Oil waste [illegible]

photo 15

photo 16

photo 17

ATTACHMENT D

SITE AVERAGES FOR SELECTED CONTAMINANTS

Site Averages for Selected Metals in Ground water

Metal	Total Metal Average
Arsenic	0.038
Cadmium	0.003
Chromium	0.180
Lead	0.074
Mercury	0.00022

* Averages are reported in ppm.

Site Regional Averages for
Selected metals and Cyanide in Soils*

Metal	Site Average	EP Toxic Threshold Levels**
Arsenic	18.0	100
Cadmium	0.5	20
Chromium	21.8	100
Lead	21.7	100
Mercury	0.5	4
Cyanide	1.1	--

TYPING CONTROL SHEET

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Diane Snow	12/11/91
Kamlah McKay	12/17/91
Diane Snow	1/25/91
Kamlah McKay	1/31/91
Nancy Sanka	02/04/92

WORDPERFECT 5.1 DOCUMENT

TABLE 2 IS LOCATED ON THIS DISK UNDER TABLE2.TRW